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Gleanings in Bee Culture

VOL. XXXVIII

NOVEMBER 15, 1910

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The Townsend Bee Book

or How to Make a Start with Bees

By E. D. TOWNSEND, Remus, Mich.

Mr. Townsend is one of the most progressive, most successful, and one of the most extensive bee-keepers in the United States. If any man knows how to give instructions that will lead to success in the pursuit of bee-keeping and production of honey, Mr. Townsend is that man. While the book is written especially for beginners, it has so much of value in it for the veteran that old timers will find profit in reading it, as well as those who are just making a start.

Table of Contents of The Townsend Bee Book :

CHAPTER I—How I Became a Successful Manager of Bees on a Large Scale

CHAPTER II—What Hive to Adopt

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CHAPTER X—Spring Management

CHAPTER XI—Making Up Winter Losses

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Editorial

WE should like to see the question of settling-tank vs. strainers in the extracting-yard discussed. Or is a combination of the two methods better?

Now is a good time to move your bees from one portion of an apiary to another. See editorial in our issue for Oct. 15, p. 645, and elsewhere in this issue.

SYRUP TO FEED BEES.

At this time of the year, do not give any syrup thinner than two and one-half parts of sugar to one of water, boiling hot; and it should be well stirred. If the weather is a little cool, feed this while hot.

SIZE OF ENTRANCES FOR OUTDOOR WINTERING.

MR. IRA D. BARTLETT, of East Jordan, Mich., who makes a practice of wintering outdoors in large packing-boxes, recommends, in the *Review*, an entrance $\frac{3}{8} \times 4\frac{1}{2}$. This dovetails very nicely with our experience here in Medina, with this difference: We recommend in the case of extra-strong colonies a little wider entrance, and for five or six frame colonies a slightly narrower one.

ARE BEES MORE HOSTILE TO BLACK THAN TO WHITE CLOTHING?

ON p. 716 of this issue our New England correspondent somewhat doubts the oft-repeated statement that bees are much more inclined to be cross to persons in dark clothing rather than light. He believes that bees become "educated" to the clothing a person wears. Wonder if he is right. We should like to see this question discussed. In this connection it will be remembered that one of our correspondents related how two dogs came into a bee-yard when the bees were not in the best of humor—one of them a black dog and the other a white one. The bees furiously attacked the black dog but paid hardly any attention to the white one. Was this a case of "education" or what?

ASTER HONEY ALL RIGHT FOR WINTER STORES.

In certain seasons some of the bee-keepers of Northern Michigan have found that

severe winter losses followed when aster honey was the chief winter supply of stores. The honey may differ in different localities, but there may also be some other condition that has something to do with the matter. Perhaps aster honey is not suitable for a winter that is long and severe, with practically no days for flight. We have just heard from Mr. C. Raney, Petersburg, Tenn., who had written us some time previous that his combs were full of aster honey, and he now says that colonies in his locality winter well on aster honey, for it does not crystallize until it is a year old. The winters in Tennessee are undoubtedly much more open, and give more chances for cleansing flights.

MORE IN REGARD TO MOVING COLONIES SHORT DISTANCES IN THE SAME YARD.

WE have had such good success in moving colonies a few rods without having the bees return to the old location that we think the advice sometimes given to move colonies a couple of miles, temporarily, and then later bring them back to the new location in the old yard, is now entirely unnecessary. In the moving that we did, as mentioned p. 645, Oct. 15, about a dozen colonies were taken away from the north side of a tree and carried to the south part of the apiary. The hives had been arranged in the form of a circle around the tree, and all were removed except those on the east and south side of the tree. As mentioned in the editorial above referred to, we smoked the bees thoroughly and pounded the hives vigorously in moving, in order to make sure that the bees filled up before flying.

After about two weeks, when we again had occasion to go to this yard we found that the hive on the east side next to the place where the other hives had formerly stood, contained rather more bees than it did originally, showing that a few had gone back to the old location; and, not being able to find the hive, they had gone into the one nearest. This only goes to show that, when hives are moved in this way, no one hive should be left very near the old location unless it contains a weak colony that should be strengthened. But practically all the few bees that return are old bees any way, and it is a question whether the colonies that lost them will suffer much, or the colony that gained them be much ahead in the long run. Of course we are referring now to moving that is done in the fall of the year.

THOSE "MOVING PICTURES" FOR GLEANINGS.

In this issue we give the first of our series of "moving pictures," showing Mr. S. D. Chapman in the act of hiving a swarm of bees. In our next we shall show Mr. R. F. Holtermann in the act of carrying his bees to the cellar. His method of picking up his big twelve-frame hives is simple and easy, and we shall show our friend in the act of handling those big hives.

The fact is, he made us a short visit at Medina this fall; and while here we availed ourselves of the opportunity of catching him in a series of "moving pictures." He then suggested that his method of carrying bees into the cellar, or carrying them out, for that matter, might prove helpful to our readers. We hunted up a twelve-frame hive and caught him in several poses.

We regret that we were unable to get the matter before our readers in an earlier issue. While most bees will be in the cellar by Dec. 1, the information will be valuable in showing how to take bees out of the cellar.

In our Dec. 15th issue we shall show not only E. D. Townsend but others in "moving-picture" acts. From that time on, the "moving-pictures" will be a special feature of GLEANINGS throughout the year.

It is unnecessary to repeat right here that, when we say "moving pictures," we mean a series of snapshots showing each separate step in any operation. The object of these pictures is to show how to perform many of the manipulations in a bee-yard to the busy man who has not the time to read through a long description.

EIGHT OR TEN FRAME HIVES; A PLEA FOR STANDARDIZATION IN HIVES AND SHIPPING-CASES.

ELSEWHERE in this issue, page 730, our old correspondent R. C. Aikin goes into quite an extended discussion of this question, and finally winds up with a plea for two brood-chambers of eight-frame Langstroth capacity, one placed on top of the other. Our older readers will remember that, about twelve or fifteen years ago, we advocated this very thing; that is, we took the ground that the eight-frame brood-nest was not large enough for a good vigorous queen; that we found it an advantage to run our comb-honey colonies in two eight-frame bodies up until the main honey-flow was on. We then removed one of the stories, placing most of the brood in the brood-chamber left on the old stand. The other combs were then distributed among colonies not up to comb-honey pitch. This necessarily left a very large force of bees that could hardly be accommodated in the one brood-nest. By giving one or two supers, one of them an extracting-super and the other a comb-honey super, we were able to accommodate all the bees. The colony would immediately go to work in the extracting-super, and as soon as it was nicely started this was taken away, when the bees

were forced to go to work in the sections. Sometimes an extra comb-honey super was given, and sometimes the colony was allowed to have only one super.

The plan worked beautifully. We secured tremendously strong colonies, and that is just what every comb-honey producer knows we must have for the production of comb honey. But we found in later years that two ten-frame brood-chambers can be worked in the same way, and the result will be just as satisfactory. While it may be argued that twenty frames is too much for any queen, we may also say that a sixteen-frame capacity is also too large for the average good queen. But the tendency nowadays is more and more toward the production of extracted. The general public is beginning to have confidence in the purity of honey in the liquid form. Before the enactment of national and State pure-food laws, many people would not buy extracted honey, fearing that they were paying a big price for a lot of tasteless glucose or corn syrup; but during the later years all this is changed. Certainly the ten-frame is better than the eight-frame hive for extracted honey. Since honey is becoming more and more popular, why not get into the bandwagon of ten-frame-hive users?

We have also observed that the average beginner and farmer bee-keeper will do better with a ten-frame hive than with an eight-frame—certainly better if he works a single brood-chamber to the colony. We notice, too, that the majority of large producers are working over to the ten-frame size. If they have not already changed, they virtually say that, if they were to start again, they would adopt the ten-frame rather than the eight-frame. There are some others who say that the ten-frame is not big enough, and that they must have 12's. To accommodate these latter people, ten-frame Jumbo hives were made, the same in every respect as the Langstroth, with this exception: The frames are $2\frac{1}{8}$ inches deeper, making an equivalent of twelve-frame Langstroth standard-depth capacity.

There come times in seasons when a single brood-chamber will give better results than one brood-chamber on top of another for the purpose of securing a large brood-nest. It is then that a ten-frame hive stands out clearly ahead of a single eight-frame brood-chamber.

Another thing, during all these years we learned that the colonies in the eight-frame hives very often go into winter quarters very short of stores, when ten-frame hives would have enough. Over and over again we have had to caution beginners who were using the Danzenbaker hive, which is the same capacity as the eight frame Dovetailed, to make sure that their colonies have sufficient stores to carry them through the winter. On the other hand, an ordinary ten-frame capacity will usually have enough if there is any kind of fall flow to carry the bees through at least until the next spring or until the next flow comes on.

Right here it may be asked, on the part of the professional old timer, "Why should he be compelled to use a hive better adapted to beginners, when he from his knowledge and experience can work a smaller hive to better advantage?" We have traveled a good many thousands of miles among bee-keepers, and have been surprised again and again to find the old veterans are just *the very chaps*, sometimes, who will allow their bees to go into winter quarters with insufficient stores. The fact is, they very often have not time to go to the distant outyards and give their hives the needed attention. Now, would it not be better if these same men had larger hives that would be more nearly automatic, that would not require so much "eternal vigilance" and fussing?

Then it very often happens that this same veteran, in the midst of a good honey-flow, finds himself short of hives and supers. If he has only eight-frame hives he is going to lose either two frames of brood or two frames of honey. Taking it all in all, it is our opinion that a brood-nest should be sufficient unto itself in a single section rather than to make it necessary to have to use two hives or two brood-chambers in order to secure sufficient capacity.

We are not sure but that most that is said in favor of the ten-frame would apply with greater force to the twelve-frame or the Jumbo hive of equal capacity. But when we consider that the ten-frame is about all one can handle, so far as lifting is concerned, and that the twelve-frame is just enough heavier "to break the camel's back," should we not rather stick to the standard—that is, standard all over the United States—rather than take something that is odd-sized or irregular?

It would be worth thousands of dollars to the industry if all the hives in this country were standard. What do we find to-day? Here is Mr. Jones, who, we will say, started with ten-frame hives. He kept on increasing until he had two or three hundred colonies. His business grows, and in the meantime his less successful neighbors want to sell out to him. Most of them have eight-frame hives, and some of them have something else. The bees are offered to him very low, and he buys them out. Now, what has he in his yard? A mixture of odds and ends. Almost any large producer in the country has this condition to contend with, not because it is of his own seeking, but because he was compelled by by force of circumstances to buy out those around him.

The management of this journal has decided that it will be saving thousands of dollars, not only to the bee-keepers but to the supply-manufacturer, to encourage standardization; and while this policy may be somewhat inconsistent with our previous policies, we feel it is none too late to mend. If it were not a fact that many of our largest producers were changing from eight to ten frame hives, and we were not also just

as sure that the average farmer bee-keeper and beginner would do better with the ten-frame hive rather than eight-frame, the situation would be different. As it is, we feel it our duty to steer the beginner, at least, right.

UNIFORMITY OF SHIPPING-CASES.

In this general connection there is almost as much reason why the general bee-keeping public should adopt standard shipping-cases. What is the sense in having, for example, two and three row 12-lb. single-tier shipping-cases? Why not adopt one or the other? What do we find on the market to-day? A double-tier 24-lb. shipping-case, a single-tier 24-lb. shipping-case, a 12-lb. two-row and a 12-lb. three-row shipping-case, a 25-lb. five-row shipping-case, all for the same sections. Every dealer must carry a stock of all these, and this stock is made the larger from the fact that we have 4¼ sections, Ideal sections, and 4×5 sections. This is aggravated again by different widths of sections of these three different sizes. Now, *somebody must* pay for this multiplicity and confusion. If the bee-keeping fraternity could see the necessity of adopting standard shipping-cases, 12-lb., and one standard 24-lb., it would save materially in the cost of the cases; and, what is more, buyers generally would be able to quote prices on uniform packages.

Perhaps the same argument might apply with reference to sections, and so on it goes. In a word, we are pleading for *uniformity*. Twenty-five years ago there was nothing on the market except ten-frame Langstroth hives. Mr. James Heddon and some of his followers favored the eight-frame. Gradually some of the manufacturers adopted the eight-frame, we among the rest. We have been convinced that it was a mistake. It would have been better for the fraternity at large if it had stuck to the original ten-frame hive. We can always make an eight out of a ten frame, but we can not convert an eight into a ten frame except by the awkward manipulation of another hive-body of eight-frame capacity. If we have an eight-frame hive, and the bees want ten frames, there is a lot of vacant space left in another eight-frame hive-body placed on top, which the cluster must warm up somehow. They simply can not warm it, and, consequently, brood-rearing during cool nights receives a check.

The time is coming, we believe, when the laws of the country will compel automobile manufacturers to use standard nuts and bolts. A good many of them, as we happen to know, are using special threads, and the only way to get a repair part is to send a telegram and then wait several days before the express companies can deliver it. Hundreds of arguments might be produced favoring a standard. If the ten-frame Langstroth brood-nest were very badly proportioned (but the facts do not seem to prove it), then it might seem advisable to adopt some other form.

Stray Straws

By DR. C. C. MILLER, Marengo, Ill.

M. T. PRITCHARD, glad I asked the question that brought out those important facts, page 661. That difference in temperature is very important, and I don't recall seeing it in print before.

IN THIS LOCALITY I wouldn't want less than 30 lbs. of honey for outdoor wintering; and if so unfortunate as to feed very late, and had no honey, I'd feed syrup, $2\frac{1}{2}$ parts sugar to 1 part water.

REMEMBER that fine field of sweet clover in picture on GLEANINGS cover for May 1, last? Every spear gone. Horses and cows ate it down so close they killed it. Hardly looks like a noxious weed, does it?

WAX from sugar-cane in sufficient quantities to warrant its extraction on a commercial scale is the latest. It is white or pale yellow; it much resembles in appearance Carnauba wax, as also in its hardness and high melting-point.—*Literary Digest*, 486, (from *Revue Scientifique*).

G. M. DOOLITTLE, you're sound as a dollar about taking bees into the cellar early. If you can take them in toward the last of November, immediately after a flight, that generally is all right; but I'd rather take them in five—may be ten—days too early than one day too late.

S. PRESTON, p. 634, with splinted foundation and split bottom-bar there is no stretching. Neither is there with plain bottom-bar. Wiring might do, if vertical, and with very heavy bottom-bar. You ask the objection to your plan. If I understand, you cut out a narrow strip a little way above the bottom-bar, and wired horizontally. That worked all right with me, but the splinting is a little easier and better.

DR. BURTON N. GATES says in Mass. Bulletin, that with foul brood "the adult bees are rendered inactive, making diseased colonies of bees unproductive." I don't know that I ever saw that statement before, and it doesn't look like good sense, if the brood only is diseased. And yet—and yet—my observation says Dr. Gates is right. It doesn't take a great deal of foul brood in a colony to make them leave their supers empty.

STRAWS for Nov. 1 I wrote in good time, put them in my pocket to mail them, and then—left them in my pocket. That's the second time that thing has happened in the past twenty years, and I must try to break off the habit. [Dr. Miller has been very regular in sending copy for Straws; and when they did not come to hand for our Nov. 1st issue we felt sure that he either must be sick or the mails had miscarried. Glad to know it was neither, even if the joke is on our old friend.—ED.]

UNITING well discussed, p. 644, but not a word about the Miller plan. Of course, I'm prejudiced; it's my baby; but I've tried it thoroughly many times during several years with never a failure, and believe it best of all. Put a sheet of newspaper over one hive and set the other over it, and that's all there is to it. The bees do the rest. No matter whether you do it quietly or noisily, only so you make sure you have all the bees that belong in the upper colony, and that they can't get out any way only down through the paper after a hole is gnawed in it. By that time they will not return to the old stand. Not too late to try it yet, if you have any more uniting to do. I'd like to know if it succeeds as well for others. [In "this locality" we do not need to use any newspaper, even when we do not take the trouble to shake or jar the bees before uniting. If you get some good gentle leather-colored Italians and clean out your blacks and hybrids you will have no trouble about uniting, and little or no trouble, possibly, from the ravages of European foul brood.—ED.]

"GIVE A FEW puffs of smoke, then wait a couple of minutes for the bees to fill themselves with honey, when you may handle them without being stung." That's the sort of foolish advice still too often given, even in books. Bees don't need to be filled with honey to prevent their stinging. A practical bee-keeper hasn't time to wait for any thing of the kind. The smoke frightens a bee so it will not sting, and it does it instantly, before it has time to reach a cell of honey. The other day I took the bottom-racks out of my hives. If I had done it without smoke I would have been stung fearfully. If I had waited for the bees to fill themselves with honey it would have taken three and perhaps five times as long. I worked with one hand while I smoked it with the other, had the rack out, and left the hive, before a single bee had time to load up with honey. [You are entirely right. It is wrong in theory and practice to wait two minutes. In this connection the statement is often made that bees simply can not sting when filled with honey, for the reason, so it is said, that they can not curve their bodies enough to insert the sting. If anybody will take the time to try this experiment he will find that the bees are "on to their job all right." The podding of the honey-sac has nothing to do with the matter at all. It is only incident to a vigorous smoking. Smoke and nothing else is what subdues the bees.—ED.]

OF MY BEST twenty colonies (which averaged 122 sections each up to July 10), ten had last year's queens, and ten had queens of the year before. Thirteen were yellow and seven dark. The very best three were dark. The ten 1908 queens gave precisely the same number of sections as the ten 1909 queens. The thirteen yellow colonies averaged 118.7 sections each; the seven dark colonies averaged 129.9 sections each. This

does not prove that blacks are better than Italians in general, only that, by continued selection, I had bred up an extra strain of hybrids. Now I'm working out the dark blood in hopes of gentler bees.

F. DICKEL has for some years taken up no small space in German journals, saying that the Dzierzon theory is all wrong; that all eggs are fertilized, and the workers make the difference in sex after the eggs are laid. Now he comes out in *Deutsche Imker* with what he considers a settler. In a black colony he shaved the heads off drone brood, shook out the brood, and transferred into these cells *worker* eggs or brood from a yellow colony. In due time there emerged from these cells yellow drones! Devauchelle, *L'Apiculteur*, 343, gives minute details of experiments in the same line, but he did not succeed in getting drones reared from worker brood or eggs.

A FURNACE in the cellar may knock out your idea of keeping the temperature down to 45. But don't worry if it keeps at 50, and sometimes even up to 60, if you do not keep the cellar opened up enough so the air will be as fresh as outdoors. I've come to believe that pure air is more important than temperature. If too warm, just keep the cellar opened up *big*. [According to our experience, every word of what you say is true. We have never been able, in this locality, to maintain a uniform temperature of 45 degrees Fahrenheit. The temperature has shown a tendency to go up as high as 60, and sometimes as low as 36 or 37. When it reaches the high points we have found ventilation a cure for roaring and general uneasiness on the part of the bees. Our theory is this: When the temperature is between 40 and 45 the bees go into a state of semi hibernation, during which respiration is very low. When it goes above 50 they become active, and consume much more largely of the oxygen in the air, which soon becomes vitiated, and, of course, uneasiness follows. This uneasiness manifests itself in "roaring," and roaring is nothing more nor less than the rapid flapping of the wings to stir up the air to create circulation, and circulation brings in new air. After a time the whole cellar air becomes vitiated, and then it is that the bees fly out of the entrance and all over the cellar bottom. There is no cure for this except a large amount of fresh air.

In the case of most cellars, especially under houses, is very difficult to maintain a uniform temperature. Unless it can be held steadily within a degree or two of 45, there must be ventilation. The higher the temperature goes, the more ventilation will be required. Of course, it is desirable not to have the temperature go as high as 60 degrees, because the bees get into a condition of summer activity. At such times they will consume too largely of their winter stores. This brings on overloading and congestion of the intestines, finally resulting in dysentery.—Ed.]

Notes from Canada

By R. F. HOLTERMANN

BURR-COMBS.

Dr. Miller, page 612, Oct. 1, refers to burr-combs, and objects to having them left year after year, because the bottoms of sections will finally get mussed up. I have another very strong objection to such combs. In handling combs, when replacing them these bits of comb in a crowded hive pinch bees, and much time is lost in releasing the bees, or they are killed. Bees thus held, for hours afterward are angry and make a lot of other bees angry. Is it not probable that the angry bees about the apiary, after manipulations, can be in part traced to this cause?



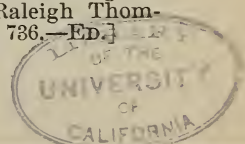
A FOUL-BROOD ACT IN ENGLAND.

My name has been dragged into a controversy raging in the *British Bee Journal*, concerning the wisdom of having a foul-brood law in that country. Let me say that, at no time in convention, in the apicultural and agricultural press, or in private conversation have I ever suggested that it was desirable to do away with a foul-brood act in Ontario, Canada. That the act could and should have been operated in a better way I have claimed. Recent amendments to the act have been an improvement, and better conditions prevail—conditions which surely could not have been brought about without a foul-brood act and the means to carry it out.



ELIMINATING THE SWARMING IMPULSE.

On page 632 Mr. Fowler has the courage to grapple with this subject. He asks if any one has "tried to breed the tails from lambs. Would this be more difficult than breeding the tail from a cat?" I am not very well posted on cats and cat-breeding, but would like to ask Mr. Fowler if any one has succeeded in breeding the tail from a cat. He refers us to the 31st chapter of Genesis for evidence that the swarming impulse can be eliminated by breeding. I see a vast difference in the objects sought. In one, color was changed, but not disposition. In the swarming impulse we have the instinct of reproduction; in nature there would be no reproduction of colonies without swarming. The surest way to convince the skeptical is to produce such a bee. In the meanwhile bee-keepers had better master the art of keeping bees from swarming. Much can be done in this direction. Could not Mr. Fowler develop a non-swarming strain of bees by keeping bees from swarming for several years? [See what Raleigh Thomas says on this subject, p. 736.—Ed.]



Siftings

By J. E. CRANE, Middlebury, Vt.

That is a good hive-cover as described by Wesley Foster, page 583, for a dry climate or wet one either.

The convention at Albany was a great success. The city hall was crowded almost from start to finish with a large number of intelligent bee-keepers.

Quite right you are, Mr. Editor, when you say, page 543, that the shaking method of treating foul brood is the *orthodox* method, especially for the American kind.

That is a nice point gained for the bees by G. M. Doolittle, page 581, that bees can tear down only such fabrics as contain fiber, and neither the skins of grapes or other fruits are fibrous.

Louis H. Scholl still believes in bulk honey, and it may be all right for the South; but I fear our Northern honey would granulate quite too soon to make this method a success in this latitude.

That discussion of the uncapping-machine is decidedly interesting, page 576, 577; but if I can have all the well-filled combs I can uncap with a steam-heated honey-knife I'll try and not grumble.

On page 546 Mrs. Acklin tells how "to settle the whole problem of swarming at one stroke when the first swarm issues" by taking away the combs, etc. Say! why not settle the whole problem a few days earlier by taking away their brood and not have them swarm at all? I like this way better.

Mr. Root speaks of a settling-tank instead of a strainer, as used by E. D. Townsend. That is a capital idea. We have tried the Alexander strainer, but it works quite too slow or not at all when the honey is thoroughly ripened, and we have been compelled to skim the cappings from the top of large cans, this being the most feasible way to separate the bits of wax from the honey.

It must be a comfort to use a capping-melter and have it work as nicely as described by H. H. Root, page 555; but, "*circumstances alter cases*." I tried to use a capping-melter last year, and it worked first rate for fifteen or twenty minutes, may be half an hour; but after a little the propolis that the bees had stuck to their cappings stuck to the bottom of the melter, and so impeded the flow of wax and honey that I had to give it up. [We have never had any thing like this happen with the Petersen outfit.—ED.]

I was interested, Mr. Editor, in what you say, page 541, about extractors. We have been disappointed in using the four-comb reversible extractor, as we have not been able to extract more honey with it than with the old four-comb non-reversible extractor that I made some thirty years ago. The reversing saves time; but it turns so much harder that we have been unable to make a better record than with the old one.

Our friend Holtermann sounds a doleful note on page 548 in regard to the raising of alfalfa in Ontario, as likely to lessen the honey crop. Cheer up, my brother. Don't you know alfalfa enriches the soil? and it is the plants on rich soil that give us honey. Who knows but that, some day, when the soil becomes filled with bacteria, alfalfa will yield honey here? You say that it yielded honey in Ontario this year, and the reason was because there was so much moisture in the soil. Well, we usually have more moisture than they have in the arid West.

Mr. Wesley Foster inquires, page 547, "How many damage claims do you know of that the express companies have paid?" Well, I know of two that they couldn't dodge—honey shipments, too. You see it is this way: When honey is given them to ship, the agent writes down in one corner of the receipt, "At owner's risk," or something of that sort, or the initials of the words so as to protect them from damage; but we have sometimes turned our express over to the one who delivers, and he forgot to put in the extras, and we were able to collect. But, shame on the companies that resort to such devices to shield themselves from their duty. The original idea of express was to carry valuable articles promptly and safely.

In your footnote to a Straw, page 545, you say that "there can be no question that bees are much more inclined to sting dark garments than light-colored ones;" and, again, referring to your experience at Mr. Townsend's, you say, "We had on a dark suit and Mr. Townsend a light one. The bees attacked us more furiously than they did him." I don't doubt it; but when you say "the observation was made at the time that it was the dark clothing that attracted the bees," I doubt if the observation was wholly correct. Had Mr. Townsend been in the habit of wearing a dark suit among his bees, and a stranger had come in in a light suit, I should not have been surprised if he received more than his share of attention.

In 1883 I had a hired man who spent most of his time in one yard of bees while I spent most of mine in another; and I noticed when I went into his yard to assist him I got more than my share of stings; but when he came to my yard to assist me he was the target, and I felt sorry for him. Bees can be educated, you see.

Conversations with Doolittle

At Borodino

A FEW HINTS ABOUT BEGINNING IN BEE-KEEPING.

I want to begin keeping bees next spring, and wish to prepare somewhat this coming winter. Can you help me a little?

This subject of beginning in bee-keeping is one of vast importance, at least to the beginner. As I look back to my own beginning with bees and think of the many difficulties with which I had to contend, owing to having no one to instruct me, I am willing to do what little I can to help you.

The first aim of the beginner in apiculture should be to post himself as fully as possible by a careful study of some one or more of our best works on the subject. And right here you have the advantage over those of us who began fifty years ago, as there are many good books on apiculture now, and several bee-papers, while there were only one or two of either, then. One might keep bees, and for a time make the business comparatively successful, without this preparatory study; but, like all other occupations, a thorough knowledge of first principles is of the utmost importance, and it will insure success when otherwise failure would be more apt to be the result of the work.

But don't think these books will help very much by a casual reading. They should be carefully studied till they become a part of your very nature, so that, when you commence with the bees next summer, you can put into practical use what you have learned. This study should, of course, be done this winter.

The next step will naturally be the choosing of the frame which you will use. And here you will meet with a diversity of opinions, and it will behoove you to go slow. As a pointer I will say that the Langstroth frame has been used so long, and has stood so well on its merits with our most practical apiarists, that the average beginner will not be liable to make a mistake in choosing that.

If you should start with five colonies in Langstroth hives I would advise getting ten other hives. You might not use all of them the first summer, but it is well to have all you want, should the season prove above the average. As few as five colonies would be my advice, then you can depend on your old business mostly for your income until you are sure with the bees.

The next thing will be a location. This should be in plain sight of the house, and easy of access, so if you allow natural swarming you can see when the bees come out, or so that any disturbance may be noticed at once and remedied. The hives should face south to southeast, if possible; and if the ground can slope that way so

much the better. Then if you can have a piece of woodland or a snug hedge on the west and north sides of the apiary, better still. If these can not be, a tight fence should be built. Bees, when in good condition, are rarely destroyed by cold, but they do suffer much from the disturbance caused by high winds and severe gales, so any thing done to relieve them in this direction is profitable.

I would not set the hives on benches. Make a low stand for each hive out of 2 x 4 stuff. Set the hives on such foundation, and attach an alighting-board to each hive, allowing the same to touch the ground at its outer edge. This will save you many bees from getting lost in early spring, when the sun shines intermittently, on cool days, for bees can crawl into a hive if they have a chance, when they are too much chilled to fly. The space in front of each hive for about four feet should be kept free from grass or weeds, so that the bees may not be entangled on their return with heavy loads of pollen or honey.

My apiaries are arranged on the hexagonal plan, the hives standing ten feet apart in the rows, and the rows ten feet apart. Where space can be obtained I prefer this distance to any other. One can get along with six feet instead of ten, but ten gives elbow room.

On the question of increase is where a great many stumble. They are too ambitious, and want to increase their number of colonies too fast, and simultaneously secure a good yield of surplus honey. The beginner naturally desires rapid increase, and at the same time he also looks for some of those remarkable yields of honey that he reads about. The first he generally secures, and the second he generally does not; and so he is apt to decide that his location is not a good one for honey. Allow me to press home on your mind that rapid increase and a large surplus can not be secured at the same time except in phenomenal cases. Remember that every move toward increase, whether made naturally or by dividing the colonies, is in direct opposition to the storing of large yields of honey.

There are three things which are almost essential for you to know. 1. You want a knowledge of the nectar-producing flora of your locality; in other words, you should know every flower that grows within flight-range, and also its time and duration of nectar secretion. This knowledge will be the key to the situation, and the means by which you can work your bees to advantage. 2. At the time of the blooming of the main nectar-producing flora that yields a surplus above what is consumed by the brood and bees, have the hive full to overflowing with workers right in their prime. 3. Keep the whole working force together, if possible, while this surplus flow lasts. Of course the nectar must be secreted by the flowers, else a crop can not be secured. Every locality has its off year occasionally in this respect.

General Correspondence

CALIFORNIA AS A BEE COUNTRY.

Some Slovenly Methods; No Danger of Overstocking.

BY E. M. GIBSON.

Mr. Root:—In your editorial, Oct. 1, you give the bee-keeping industry of California a black eye. Let us see if there is not a silver lining to the dark cloud. To start with, I will say I have no bees for sale; but I have an offer for all I have, and the one who made the offer got me to promise that, if I should conclude to sell at some future time, I would give him a chance to buy them. I have also had several other offers. I write this so no one will think I am trying to get some free advertising. Bees in this section are the most salable of any thing I know of, notwithstanding the failure we have just had. They bring from three to five dollars in any old hive, and without the purchaser knowing the age of the queens. Those who have ranches to sell try to get bees to facilitate the sale of them. This would indicate that the bee industry is not at so low an ebb as some might suppose.

Yes, we have failures; but I have yet to hear of the country where they do not have them. The failure this year was considered *one* of the worst, and yet I extracted 10,640 lbs. of honey besides leaving at least 3000 lbs. in the supers for a special purpose which I may write about after another year of experimenting. There were scores of bee-keepers who did not get a pound of honey; but it was not the fault of the season nor of the bees. There are bee-keepers outside of this State who would consider the above amount quite a decent crop in a *good* year. Any thing below one case (120 lbs.) is considered a failure here. There are years when we get less; but it is doubtful if we get less than that amount more frequently than failures occur in other sections, for all countries are subject to occasional drouths, and too much rain is also detrimental. I have seen it rain in different parts of the East for two weeks at a time without a day's cessation, just at the time the bees ought to be doing their best work.

It reminds me of what a man told me about Oregon not long ago. He said it rained up there all the time. It rained without any sense.

The cause of our worst failures here is the lack of *late* rains. About the time our surplus-honey flow begins, the weather has become settled, and there are no storms to interfere with the bees working, and they hum from daylight till dark. This is one reason we get such large yields in good years. We bee-keepers should be forehanded enough so that we shall not have to sell all our crop

in the flush years, but hold it over for such years as this. They are sure to come, sooner or later, in all sections of the country, and honey can be kept indefinitely without waste or deterioration, and a large amount in weight can be kept in a small space. This would also help those to get better prices who were obliged to sell.

Bee-keepers here can take care of three times as many bees with the same amount of labor as they can in cold climates, for they do not have to haul them from the out-apiaries and lug them into cellars and return them again in the spring, and they do not have to swathe them in building-paper, chaff, leaves, etc., if they are left on the summer stands; and after all of this labor, many, on opening them in the spring, find half of them dead and the other half in a weakened condition. Most bee-keepers here do not even take off the supers during the winter months, and, in fact, the bees commence to build up in January, and quite often in December. Bees that are left in October with plenty of stores, a good queen not over two years old, and a good hive, will, twenty-nine times out of thirty, be found doing well in February.

Then there is the comfort of the bee-keeper to be taken into consideration, which is a big item to me, for there is much more pleasure in going out any day when the sun shines, and hear the bees humming, than there is in having to bundle up every time one wants to step outside, wade through the snow, and hurry back near the fire for fear of getting his nose frozen. Bee-keepers can work with their bees here practically all the year round.

I am certainly surprised that any one fears that this country is going to be overrun with bee-keepers on account of the writings of Mrs. Acklin. For my part I should be glad to see some bee-keepers come in who intend to make it their special business, and who have some knowledge of the work, or at least would try to learn to produce well-ripened and clean honey, and take the place of those who have gunny-sack rat-holes which they call honey-houses. It would help instead of being a detriment to the business.

I would just as soon have rats and mice running over the dishes in the pantry as to have them running over the utensils in the extracting-room. I do not wish to convey the idea that bee-keepers are any more untidy than the butcher, baker, or grocer who handles the things we eat; but I think it would do no harm to be more tidy than some of them, for the minister's wife said some of the family were sent to the store early one morning for sugar, and the grocer had to shoo the cat out of the sugar-barrel. No doubt she had slept there all night.

A man ate supper with me last evening who said the people where he had been boarding bought a can of honey from a nearby bee-keeper, and he poured a little on his plate at meal time and got five dead bees on his plate. If Mrs. Acklin's writings will

bring about a change from of that kind of bee-keeping I will risk the overstocking part, and would be in favor of voting to help pay for her contribution instead of barring her out.

It is easy for us to persuade ourselves that our particular right is divine, but the demand of some one else to share our right is rebellion against the divine order; but any one with knowledge enough to keep bees successfully will not trespass on another's range, for he would know that such a course would spell failure for one and perhaps both.

Do not think that I by any means include all California bee-keepers as ne'er-do-wells, for a majority produce as fine honey in every respect as can be found anywhere. The class I have referred to would be ne'er-do-wells in any vocation. We can not afford to go to sleep. The struggle for supremacy in all of the industries is on. It is fierce. It will be fiercer, and will eventually end in the survival of the fittest.

Do not be deluded by the pessimist who talks about over-production. If the population of this country increases as fast in the next two decades as it has in the past two there will be scarcely enough nectar-producing plants in this country to supply the demand for honey. I am judging of the future by the past. I could give some statistics by one of our honey-buyers who has bought honey here for thirty years; but time and space will not permit.

Jamul, Cal.

[It was not our purpose in the editorial to which you refer to give California a "black eye," but, rather, to let those who are intending to migrate to your State of sunshine and beautiful climate know that there are some drawbacks, the chief of which is the irregularity of the seasons. We had in mind particularly the locality around Los Angeles—especially the mountain-sage districts. If we are correct, in those districts the seasons have been very uncertain. We believe that your locality is more dependable from what you say than any in and about Los Angeles. Central California, while it does not have, some seasons, as heavy yields as Southern California, seems to average fairly well. Taking it all in all, California is a State that has every kind of climate and conditions; and when we speak of California, perhaps it would be well that we particularize as to locality.

While we may perhaps have unwittingly given the region in and around Los Angeles a "black eye," yet we know of many bee-keepers who have pulled up stakes to move to these "El Dorados" only to find, when it was too late, that it had been better for them if they had remained at home under conditions with which they were familiar. In our last issue Mrs. Acklin pointed out how different California conditions are, so far as bee management is concerned, from those here in the East. This very difference is what makes it hard for a tenderfoot to get in right when he goes into new territory.

A "little bird" tells us that some of your colleagues may get after you. While, no doubt, you have adhered strictly to the facts, they will tell you that you will have a flood of bee-keepers who will spoil the locality. All we can say to these outsiders is, go slow and be careful. Do not pull up stakes, but spend a year with some bee-keeper, leaving your family at home until you see whether you like it or can cope with conditions successfully; then take advantage and hunt up some locality where there are no bee-keepers, and where you will not be trespassing. California is a large State. There is room for more people in it, and for more bee-keepers; but do not make the mistake of squatting down beside another bee-keeper who has long held the field. The old timer will out-distance you every time because he *knows* the peculiar conditions that affect the bee business.—ED.]

PERFECT CONTROL OF BEES WITH ECONOMY OF LABOR.

The Double-bottom-board System Explained.

BY J. E. HAND.

Continued from last issue, page 693.

Bee-keeping is somewhat different from other branches of rural industry in that we have to deal with creatures whose every act is guided by a mighty impulse—an impulse that neither time nor location can change—an instinct that kings and armies can not overthrow, and yet the very strength of this mighty impulse is its most vulnerable point—the point that admits the entering wedge of man's reasoning power, and makes it easier to control bees than it is to control other domestic animals.

Without systematic effort but little is accomplished along business lines, and bee-keeping is no exception to this rule; therefore, to render the equipment doubly effective there is a system that goes with it. Every bee-keeper in the North knows how difficult is the task of getting all colonies in condition to enter the supers at the beginning of clover bloom. It is bees that gather honey, therefore we should see to it that every hive is chock full of bees at the beginning of the harvest. Remember that 25 strong colonies will store more surplus honey than 100 weaklings; therefore all colonies that are not in condition to enter the supers at the beginning of the harvest should be united with some other colony. There is no more excuse for a bee-keeper to allow a part of his apiary to remain unproductive than there is for a farmer to allow a part of his farm to become unproductive by failing to attend to the simple details of his occupation.

It is true that it requires some skill to control a rousing colony; but it is the rousing colonies that give us rousing crops of surplus honey if we possess the skill to direct their energies in the right channel. To prevent

strong colonies from contracting the swarming fever before the main honey-flow we give them a full upper story of empty combs above a queen-excluder. This will prevent the storing of honey in the brood-chamber, which will be filled with brood.

When the harvest is in full swing, and the top story is about half full of uncapped honey, assuming that each colony is provided with a switch-board we will begin operations for the control of swarming by placing the top story, bees and all, down upon the vacant side of the switch-board, and exchange the central comb for a comb of brood and bees, including the queen from hive No. 1; put on a queen-excluder and a super of sections; close the hives and throw the switch, thus closing the inner entrance to hive No. 1, and at the same time open the inner entrance to No. 2 without changing the appearance of their outside entrance.

The returning field bees, laden with nectar, will enter the new hive through their accustomed entrance without a moment's hesitation, and no time is lost to the bees in getting accustomed to new surrounding, which in the midst of a good honey-flow means a gain of several pounds of honey over other methods where bees are shaken and otherwise unduly excited, by throwing them into an abnormal condition, causing them to sulk and loaf for a day or two, when a colony in a normal condition would show a gain of 5 to 10 lbs. per day.

The switch on the back side is thrown in the opposite direction to provide a new entrance for colony No. 1, which has been so smoothly robbed of its field bees, and which should now be given a queen. The honey in the new brood-chamber will go into the sections to make room for brood.

A strong point in the new system is that the brood in colony No. 1 is held in reserve to re-enforce the swarm; therefore, as soon as a goodly force of young bees are again flying from No. 1, which will be in about eight to ten days, we will throw the switch on the back side, again closing the inner entrance to No. 1, and, opening the inner entrance to No. 2, the returning field bees will scamper into hive No. 2, pell-mell, deposit their load of nectar, and scud to the fields as though nothing out of the ordinary had happened. This is what we understand by perfect control of bees.

Hive No. 2 is now crammed full of bees with an entrance at each end $\frac{1}{2}$ by 12 inches, and a one-inch space below the frames, both of which are important factors in solving the problem of swarm control.

The entrance to No. 1 now being closed we will again provide a new one by opening the auxiliary entrance on the side. This will usually settle the swarming question during an ordinary honey-flow; however, should the harvest continue until the brood begins to hatch in No. 2 it is advisable to shift the field bees back into No. 1. This is easily and quickly done by reversing both levers, thus closing both the inner entrances to No. 2, and opening both the inner entrances to

No. 1, transferring the supers (bees and all) over to No. 1. The entrances to No. 2 being now closed, we will open their side entrance.

All four entrances are now open, and the side entrance to No. 1 may be closed in a day or two; otherwise it will serve as a check to the next shift. Since the bees that have a habit of using that entrance will not be shifted by the levers, these entrances are also used as safety-valves against the possibility of weakening a colony so as to cause the loss of brood. It will be noticed that, after the first shift, positively all that is required to control swarming is to throw the switches once in eight to ten days and transfer the supers. The hives being so close together, this can be done without moving from one's tracks; however, during a good honey-flow it will, perhaps, be necessary to add an empty super at each shift, which may be placed at the bottom, and the partly filled ones (bees and all) on top.

At each shift a strong force of young bees is called into action to re-enforce the swarm, which is steadily increasing in numerical strength instead of decreasing, as is the case with natural and shook swarms. If no increase is desired, no queen is given to No. 1, from which the bees are shifted over into No. 2 at intervals of ten to twelve days. After the second shift but few bees will remain, and the hive and combs may be used as desired.

A noticeable feature of the system is that the double entrances always go with the strong colony, and the small side entrances with the weak one. As a further aid to swarm control we usually raise the back end of the cover during very hot weather. Thus the field bees may be shifted back and forth from one hive to another automatically at intervals of eight to ten days without disturbing their equanimity in the least, or interfering with the serenity of their usual occupation.

Again, this is what we understand by perfect control of bees. Sectional hives have no advantages under the new system, since the new principle reduces frame-handling to the minimum, and entirely precludes any necessity for handling brood-chambers.

Birmingham, Ohio.

To be continued.

A BEE-LINE STRAIGHT UNDER FAVORABLE CONDITIONS.

Conditions Under which it is Made to Deviate from a Straight Course; an Interesting Discussion.

BY RALPH P. FISHER.

Compared with my experience, the definition of a bee-line as given in Dr. Miller's *Stray Straws*, p. 612, October 1, is very misleading. The investigations of one Felix Plateau, and the footnotes of the editor, I fear, are not quite complete, wherein the following is offered to strengthen the point at issue. In hunting bee-trees the bee-line

is the essential factor of the hunter's success. I will dispute the statement that bees beginning a circuitous route will continue to go and come by that same route, placing such occurrences as the exception and not the rule.

In the lining of some 800 bee-trees I have the first time to notice bees traveling in a circle or circuitous route, though frequently I have found them forming angles in flight. Flat lands and mountains are here grandly mixed, wherein the bee-line can be observed in all peculiarities.

My experience shows that bees invariably seek the shortest way home, adopting the route that offers the least obstruction in the way of trees, etc., on windy days especially; for on still days they fly high enough to pass over the tallest timber, in which case they invariably fly straight.

As I line bees by sound rather than sight I have come to judge a bee-line most accurately, and know they conform to a straight line just as soon as circumstances will permit. The wind or the air currents alluded to by the editor are, in every case, responsible for bees flying in other than straight lines.

In the fall, some time after a late flow of nectar, there are many young bees flying about the fields seeking their first load. If one of these bees is caught and allowed to fill up with honey it is very likely to return by the route it came. If this same course be other than straight, the line will conform just as soon as some old bees that know the surrounding country begin making trips from the supply to the tree or hive. Young bees, very soon after birth, early learn to follow the older ones in any specific duty or direction. Once I lined bees from a field at the foot of a mountain across a valley to a bee-yard two and a half miles distant. Between this field and the yard was a swamp filled with very tall timber, being nearly a mile wide and a good half-mile from where I set up my hunting-box. When the bees started from the box their line of flight was somewhat more than 30 degrees to the right of an air line to the farmer's yard. The yard being known, and the line-way to the right, I naturally supposed the bees were those having an abode in the edge of the swamp. A long search failed to locate the tree, however. As the season was very late I did not give the bee-yard any consideration, yet my efforts to find a bee-tree were fruitless, and I gave the cause to the wind. The next afternoon being exceptionally mild I went back to retrieve my failure of the day before. The day being much warmer, more bees were in flight, and I was not particularly surprised to note a material shift in the direction traveled. To-day I could follow them by sound, where, the day before, I had to depend on sight. At any rate I easily followed them to the farmer's bee-yard. The diversion of flight on the second day was simply another case of bees adapting themselves to circumstances; for when the wind blew they kept close to the

ground and went around the timber; but when the wind was still they were quick to take the straight course over it. In going around the timber the bees did not travel circuitously, but straight to a distant point. Then, making an angle, continued straight to another distant point, and so on home.

Never yet have I caught them making a long curve; but invariably, and while wind was present, I found them cutting angles, always close to the ground, where the wind's sweep is less violent.

That the supposed and popularly accepted bee-line is the course of bees through air, and always straight, is more true than otherwise—so much so that my experience proves the continued use of it as a comparison to be safe and orthodox.

Vienna, N. J., Oct. 11.

VEGETABLE WAX.

BY J. FORD SEMPERS.

Reference has been made concerning the presence of wax in plants, and I am reminded that we have in our eastern flora several species of wax-bearing plants. That is, the secretion is much more prominently exhibited than by the delicate coating on fruit and leaf. The myrtle wax of commerce is a product of two species of *Myrica*—the bayberry (*M. Carolinensis*, Mill.) of the Atlantic coast States and shores of Lake Erie, and the wax myrtle (*M. cerifera*, L.) having the same range along the coast.

These shrubs and low trees are found in light, sandy, usually wet, situations. They are well known, both for the fragrance of the leaves and the hard wax-covered fruits they bear. Just how many of these little berries, scarcely larger than a mustard seed, would be required to yield a pound of wax is something of a conundrum to me. In the early days of our country, wax for domestic use was derived from these plants, and candle-berry was one of the local names applied to them. At the present time they still yield tribute to those who have the time and opportunity to gather the fruits. The wax is separated by boiling in water, which process is repeated several times before the product becomes the bayberry wax offered for sale. In burning, the wax emits a pleasant aromatic perfume.

I have often wondered that the bees, in their propensity to daub every thing in the hive with propolis, had not made use of this easily accessible supply of wax. Occasionally I see a few bees coming in loaded with what to all appearances is this wax, or a very light-colored propolis, which I have not yet been able to decide.

Aikin, Md.

[There is no reason why, some seasons, bees would not gather this wax. We know that, during a dearth of honey, they will pull off bits of wax from old brood-frames and other hive parts. Yes, they will gather

wax when they can get it, the same as they will appropriate gums for their propolis work.—Ed.]

A NOVEL AND A SIMPLE METHOD OF HIVING A SWARM.

How to Make a First-class Swarm-catcher Out of a Common Bushel Basket and a Forked Pole.

BY E. R. ROOT.

While I was up in Northern Michigan, among other persons I called upon was S. D. Chapman at Mancelona. Our newer readers may not remember him, perhaps, as one of our old correspondents and one of the leading bee-keepers of Michigan. Our friend explained, when I arrived, that this had been an off year, and that his bees had not done much if any thing. The season looked very propitious during the spring and early summer; but the drouth, coming just when it did, practically spoiled the honey crop.

While we were sitting on the porch talking, one of the members of the household remarked that a swarm was out. Now, I have seen swarms hived hundreds of times; but almost every bee-keeper has his own way of doing the trick. I said to Mr. Chapman, as we moved out to the bee-yard, "I should like to see your way of doing it."

"Well, now," he said, "you have come at just the right time, for I have not had another swarm during the whole season."

So saying, we proceeded to the bee-yard. We found a fairly good-sized swarm on a fruit-tree near one side of the yard. As there had been no other swarm that season, Mr. Chapman said he had no swarming-pole, and he would have to cut a sapling from the woods near by. In a few moments he came back with a small tree which he was trimming up into a long straight pole with a fork on the end. The pole when finished was between twelve and fifteen feet long. He next went to the barn and secured a common bushel basket. One handle of this he hooked over on the end of the fork of the before-mentioned pole, and then proceeded to shove the basket up under the swarm, as shown in the lower right-hand picture herewith. When the basket was clear up against the limb he gave the pole one quick shove upward, dislodging perhaps three-fourths of the bees. Three or four more upward pushes dislodged all the bees, as will be seen in the middle picture at the bottom. When the bees began to roll over on the outside, he drew the pole down; and when the basket was within reach he held it up for my inspection. "There," said he, "that is the way I catch my swarms." He then dumped it in front of a prepared hive and the work was done.

In the first place, you will remember that he had no swarming-pole, and rigged up an outfit inside of ten minutes that is probably nearly the equal of any thing that has ever

been made. Bushel baskets are usually available around every farmhouse; if not, they can be bought at an insignificant price. A small sapling, perhaps one inch in diameter, comprises the rest of the outfit. The fork at the end must have the prongs long enough so there is no danger, during the process of jarring the swarm, of unhooking the basket.

The upper view shows the bee-yard, the bank barn, and the honey-house and workshop on the left. Beneath the honey-house is his wintering-cellar.

Mr. Chapman is too well known to need very much introduction here. He is regarded by bee-keepers of Michigan as one of the most successful farmers and bee-keepers in the whole State. He apparently does not follow Mr. Hutchinson's advice to keep more bees. He would have been left high and dry this season if he had. While he has two or three outyards he has a fine farm which he operates in connection, and apparently this kind of combination is particularly advantageous when there is a poor season with the bees.

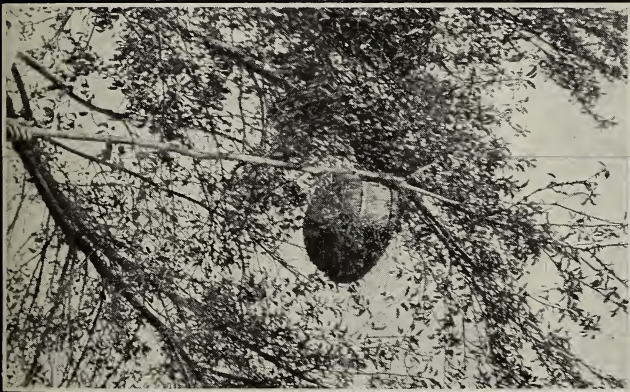
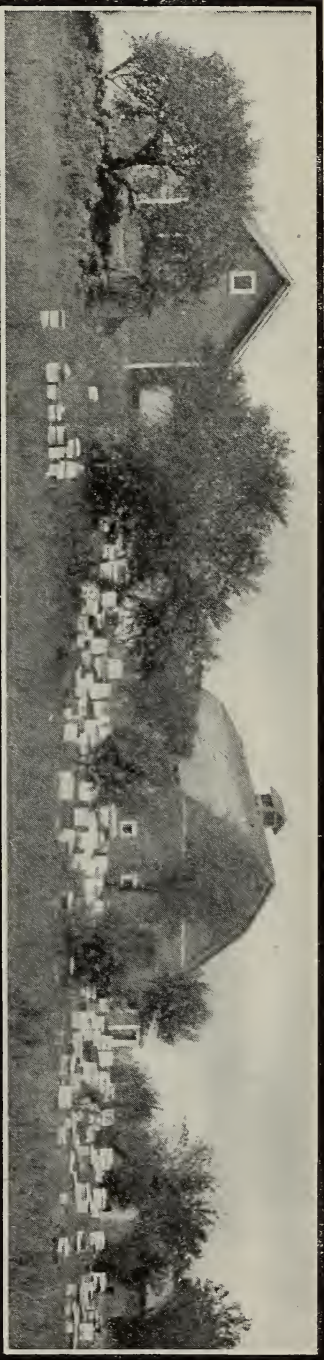
The general appearance of the farm would indicate that Mr. Chapman makes it pay, and pay well. When I see fine buildings, land that is not overgrown with weeds, a well-kept home, and a neat pretty apiary—well, I know their owner is more than making ends meet. When I asked the liveryman if he knew where Mr. Chapman lived, he said, "Oh, yes! he is well known, and is one of the most prosperous farmers in these parts."

If there had been more time at my disposal I should have been glad to show Mr. Chapman doing some stunts with his bees; but it was necessary for me to leave that afternoon.

A VISIT TO A BLIND BEE-KEEPER.

He drove me across country to a railroad station by the name of Alden. He there introduced me to a Mr. John Armstrong, a blind bee-keeper, who has been without the use of his eyes for thirty years. Wonderful to relate, this man has some thirty or forty colonies which he handles almost alone. His blindness was due to a premature mine explosion as a young man. While he has not seen the light of day for many years, he seems to enjoy life, walks all over town, goes all through the Michigan woods untended, finding his way apparently without difficulty with his cane. Of course, in working with his bees there come times when eyesight alone is indispensable. Fortunately his little son is able to give him material assistance.

Most men would be utterly discouraged after losing their eyesight; but Mr. Armstrong made up his mind to make the best of the situation, and he did. He would shame any one possessed with two good eyes who would complain that he did not have any chance in the world. He is a sample of a kind of courage and determination to overcome difficulties that is altogether too rare.



S. D. CHAPMAN'S APIARY, NEAR MANCELONA, MICH.; HIS METHOD OF HIVING SWARMS WITH A FORKED POLE AND A BUSHY BASKET.



A BUSINESS MAN'S APIARY IN TEXAS, WHICH YIELDED OVER \$450.00 WORTH OF HONEY, ALTHOUGH THE BEES RECEIVED ATTENTION ONLY AFTER BUSINESS HOURS.

A BUSINESS MAN'S APIARY IN TEXAS.

BY TOM BURLISON.

The engraving represents my apiary in town where I spend many pleasant and profitable moments after business hours. I have 41 colonies, which are run for comb and bulk comb honey. I averaged about 100 pounds per colony this last season, which netted me over \$450 in all.

The yard is located just 20 feet from the back porch, the building to the left being the honey-house. A large hackberry-tree shades almost the whole yard from noon until evening. The cedar-tree at the right is a favorite clustering-place for swarms.

The solid fence on the north keeps out north winds and also causes the bees to fly a little higher. The rest of the yard is enclosed with a low fence, only high enough to keep the babies out until they get acquainted with the bees.

Waxahatchie, Texas.

A GOOD SHOWING FROM ONE COLONY OF BEES.

BY W. H. GREEN.

The 33 Langstroth combs shown in the engraving, and the two supers with sections, were all from one colony of bees. The combs were very thick, as they were spaced far apart in four stories, the comb-honey supers being on top of all. The whole amount was 325 lbs., all of it being fine quality of thick white-clover honey. Several of my colonies did as well.

I am selling my honey readily at a good

price. I can see a big improvement since the pure-food law went into effect, as the people are anxious to use more honey and are willing to pay more for it than before.

Marysville, Ohio.

INCREASING THE SIZE OF THE CELLS TO MAKE LARGER BEES.

BY THE JUDGE.

Bee-keeping is not new to me. I am not a beginner, neither do I know it all. My first experience was in the fall of 1884 and spring of 1885; and since then I have handled bees more or less—in 1887 and 1888 under that past master, A. E. Manum, and for the last few years merely for the fun of it as an amateur in the city. My success has been varied, generally more of pleasure than honey; but of the latter I have produced as high as 750 lbs. of extracted honey from six colonies, spring count, and increased the same to fifteen.

Now, if it is true that bees raised in drone-cells under forced conditions are larger than those raised in ordinary worker-cells; that worker-cells range 25 to 29 to the square inch, and drone-cells 17 to 19 to the square inch, why not make worker-cell foundation 22 or 23 cells to the square inch, and so help increase the size of the worker bee?

SIZE OF THE FOUNDATION SHEET.

I find that the light brood foundation which I have been using is not large enough. It is more than $\frac{3}{8}$ inch above the bottom-bar of the frame when fastened in the slot at the top of the frame; and the bees do not build it down to the bottom-bar. It is highly desirable to have the combs

clear down to the bottom-bar, for many reasons, and I know of none opposed. A scant $\frac{1}{8}$ inch at the ends is all right, and I shall have my foundation cut so as to hang within $\frac{1}{8}$ inch of the bottom-bar hereafter, and try to get combs built clear down.

WIRING FRAMES.

Nearly each one has some particular way of doing similar things. Now, in wiring frames I use only three wires. The frames come bored for four, but I do not find the top one necessary. I believe the slot and wedge of the Hoffman frame to be the most perfect manner of fastening the foundation at the top, and I have no trouble whatever with its sagging between the top and the first wire I use—the second in the frame. There is a slight sagging in the middle of the frame between the two lower wires. I have recently examined a lot of combs which have just been drawn during an August flow from goldenrod, and I find them all good. They have been filled with brood and honey, and are fine except the wasted $\frac{3}{8}$ inch above the bottom-bars.

FEEDERS.

I use a two-quart Mason improved glass jar, the kind having a glass top, with screw cap. Take off the glass, put on two rubbers, a fine perforated tin in place of the glass, and you have a feeder that works

fine. Invert it over a small board with hole therein slightly smaller than the top of the jar. For spring stimulative feeding you can feed just as slowly as desired by adding a pasteboard inside of the perforated tin, having a hole therein of such size as will give the result desired. No heat is lost with this kind. It can be put right over the cluster, and two quarts will last a week.

RABBETS.

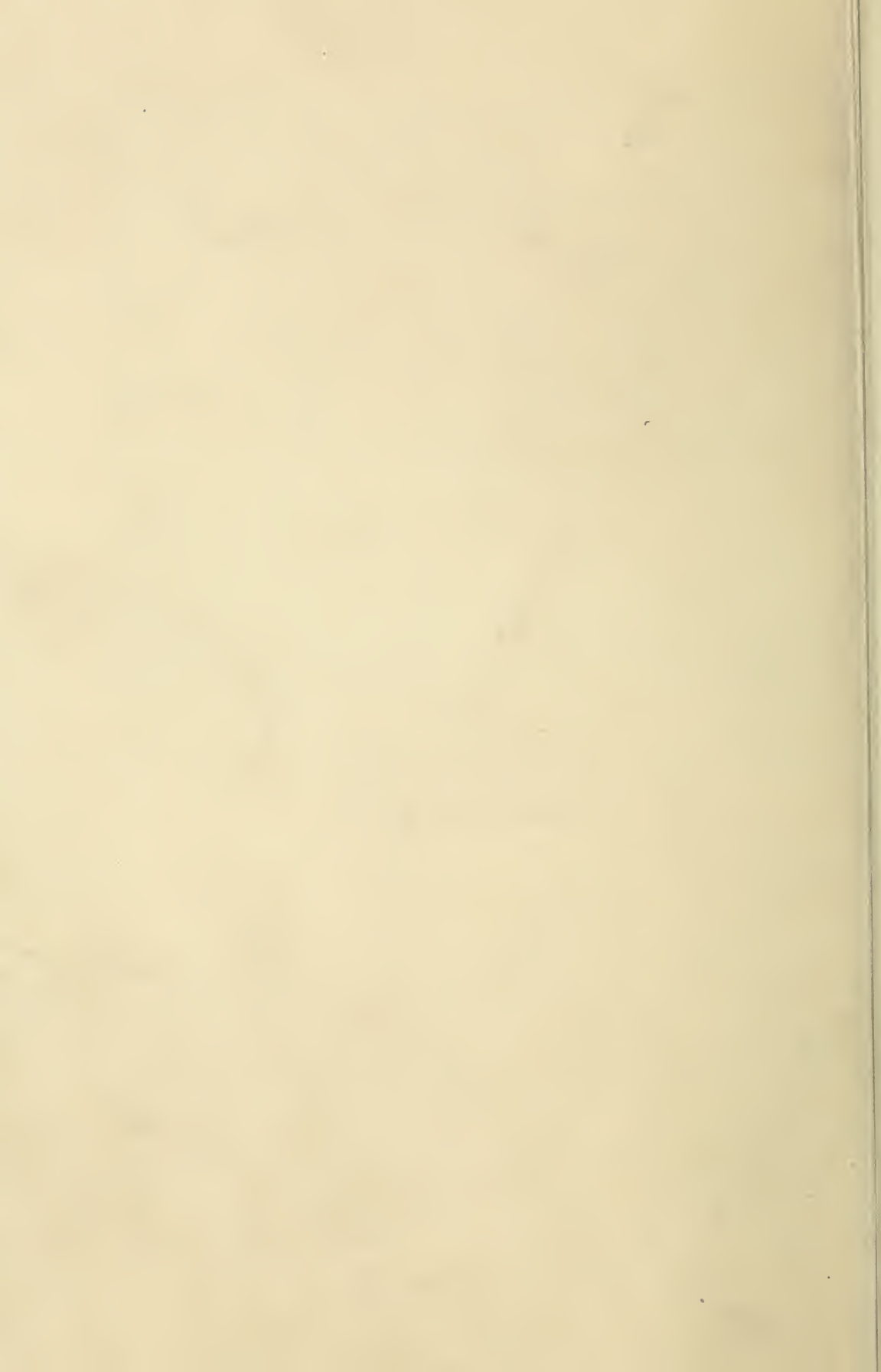
I use galvanized iron, cut half an inch less than the inside width of the hive. A piece $1\frac{1}{2}$ inches in width is folded over $\frac{3}{8}$ inch, but not pressed together. When nailed on the inside of the end, this folded edge rests on the wood and the nailing will always hold. A heavy frame may be dropped on it without bending or knocking off. I find it strong and very durable, and it does not cut fingers as sharp edges do at times. They are cut short so as not to be filled at ends with propolis so quickly.

Barre, Vt.

[Increasing the size of worker foundation in order to get larger bees has been tried. In the first place, we are not sure that larger workers would be desirable. Second, larger cells do not seem to accomplish such a result. The bees try to rear drones in them, mistaking them for drone-cells; but they make bad work of it, and finally give the thing up in apparent disgust.—ED.]



SURPLUS HONEY FROM ONE COLONY.





NATIONAL BEE-KEEPERS' CONVENTION, ALBANY, N. Y., OCT. 1. REPORT OF THE CONVENTION LAST ISSUE, PAGE 697.

SHIPPING LONG DISTANCES BY FREIGHT.

Building a Separate Floor in the Car for Each Layer of Hives.

BY VIRGIL WEAVER.

From late fall until early spring one can ship colonies of bees in single hive-bodies. First, all bottoms (placed deep side up) should be nailed on tight. I use four crate-staples, two on each side, at an angle of 45 degrees. By having the staples slope in opposite directions the hive-body will be kept from slipping either backward or forward. This is quite important, as any slipping would tend to release the bees.

If the frames are self-spacing, all is well. If the colony covers more than four combs and less than eight, take out one of the eight combs, pressing the remaining ones to each side of the hive, leaving a space in the center for the bees to cluster in. I press the combs tight to the sides of the hive and nail each inside frame with a 1½-inch nail. If the colony covers eight or ten combs, I take out two combs instead of one.

In warm weather, when the colonies are strong I place a deep super on top of each colony and nail the two bodies together, in the same way that the bottom-boards were nailed on. I remove every other frame from the super and nail the others, after spacing them equal distances apart. For so large a colony we do not remove any combs from the brood-chamber since there is clustering space in the super above, but force all of the frames to one side and nail the outside frame to hold the rest firmly together. If the combs should be stuck together with burr and brace combs, the nailing would not be necessary, especially in ten-frame hives.

Instead of a cover I make a frame of ¾-inch stuff that fits the top of the hive, and tack a wire screen over the frame, held on securely with thin strips nailed on top. This gives a ¾ clustering-space at the top, so the bees can not crowd too closely against the screen, and thus smother. When this screen frame is nailed tight to the hive, and another screen nailed over the entrance, the colonies are ready for shipment.

In cool weather a box car may be used; but in warm weather a stock-car is best. To load the car, place a layer of hives over the bottom, making sure that the frames are lengthwise of the car. About 120 eight-frame hives can be put in one layer in an 8×36-foot car. Before the second layer is put in, it is best to build a floor above the first layer by nailing 2×4's crosswise of the car over about every other hive, turned flat side down. Then cover the entire space with good strong lumber for a floor. Buy this lumber in 18-ft. lengths if possible; if not, three 12-ft. lengths will answer. It is best to make a new floor over the whole car, then the next layer of bees can be placed on it, as on the original car floor. The lumber for the floor should be toenailed to the ends of the car rigidly, as it must not move a particle. I do not think it best to put more than three layers in a car.

The solid floors for each layer will keep out the light, and will also keep the heat from the lower hives from injuring those in the upper part of the car. This is an important advantage; for if any colonies smother

er they are always the ones on top. It is best to cover the top layer of hives with something to keep out the light, as the light makes the bees crowd to the top, and this is what plays havoc. If the colonies are packed solid in a stock-car, there will be no need of spraying the screens to cool off the bees.

In the year 1905 I shipped 130 colonies of bees 750 miles and lost only 11 colonies; and even this loss could have been prevented if the combs had been removed according to the plan above. They were shipped September 15, with a minimum temperature of about 85 degrees during the time they were on the road. The trip took in all 66 hours.

I found it was quite handy to have a few pails of honey to give to the railroad men when I wanted a favor. Making transfers is the hardest part for the bees. It is a good plan to climb into the engine-cab and ask the engineer to handle his train as easily as possible, and then give him a bucket of honey for his trouble.

Valley View, Ky.

A THREE-WHEELED HIVE-CART.

BY R. V. COX.

The engraving shows the kind of cart I use in my bee-yard. I like it better than any thing I have ever tried, and it is away ahead of any sort of wheelbarrow.

The upper view shows it loaded with ten-frame supers, the third wheel taking the weight off the arms. There is a brake on the large wheels that can be set so as to hold the crate anywhere. With such an apparatus as this there is no skinning of knuckles on a swinging honey-house door when taking supers in to be extracted.

The lower view shows the long comb-box which is provided with a cloth cover.

Sloansville, N. Y.

BEE-KEEPING AN AID TO HEALTH.

BY DR. A. F. BONNEY.

Some small knowledge of medicine, coupled with a habit of observation, has shown the writer that when the average person begins to lose health he also parts with hope, and dies all the quicker on account of it. I have done surgery without an anæsthetic for Indians which would have almost killed a white man from shock, yet under other circumstances the red man would die. Let one of them contract tuberculosis, or have a severe pain which he does not understand, and, covering his head with his blanket, he will sit for hours. It is a demon that has possession of him. The medicine man of the tribe was not able to drive it out, even by the aid of the skin of the serpent, and hope left him.

The white man is wiser only in degree. He will not, it is true, cover his eyes from the light, fearing, even in daytime, to catch a glimpse of the spirit which has possession of him, but I have seen tubercular patients who were well able to ride, walk, and row, sit and mope, hopeless of recovery. Had they adopted sanitary methods they would, very likely, have recovered. Some others, men, devoted their waking hours to dissipation, seemingly believing that King Alcohol would burn out the other evil. They died, of course, while a sane life, one of exercise and diet, might, and in many cases surely would, have aided them in shaking off the disease.

The beginning of my bee-keeping career found me weighing 110 pounds heavily dressed. To-day I weigh 165 in fighting clothes, and they weigh no more than the bees compel. While I still have some asthma, I am a comparatively well man, and able to work all day in the yard.



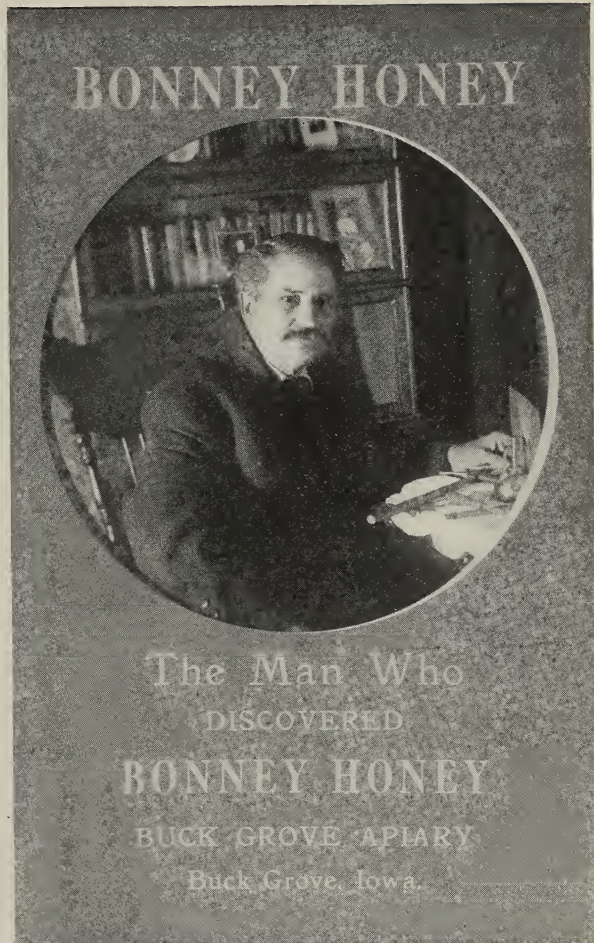
COX'S THREE-WHEELED HIVE-CART.

I could extend this article indefinitely, but it is not necessary, for I can state briefly that there is a fascination about working with bees which causes one to forget his ills, and work, even when hardly able to crawl. This is not levity, for I have wrestled with my bees when hardly able to put one foot before the other from lack of breath, thus bringing on a healthful fatigue which insured sound slumber—nature's most certain way of causing repair. I am not prepared to say that the bee-sting poison I absorbed had any thing to do with my recovery, but I think not, for I still have the asthma. Rather was it living in the sunshine and fresh air. My increase in weight may have come from quitting the use of tobacco, and I shall always think the constant use of honey while I was at work (for I am very fond of it) had much to do with my ability to quit a habit I had had for fifty years.

To those who are ailing let me say, get bees, and do not stop with one swarm, as we generally advise beginners, but get several hives so that you will have something to do all summer. One swarm will not give the necessary work, for the bees would not survive the handling you would give them. Put your bees in good chaff hives so that you will be able to judge with some degree of certainty as to what to look for in the spring, for no common cellar will serve to store them in, and there is too much real work and uncertainty about wrapping hives in tar paper or any thing else for me to recommend the procedure to a beginner. In the spring, when the bees swarm, chase them; gather them in and hive them, and you will find that, when the season is over, you will be improved in health and spirits, and possibly in wealth, for there is good money in keeping bees, as many a man can testify.

I am enclosing a photograph, showing at least that I am in good health. I am using this post card as a local advertisement. Locality is getting to have a wide significance in the case of "Bonney" honey, for a railroad man told me recently that the boys talked of it away out in Montana. This may have been a cheerful prevarication, but it sounded good to a beginner, to say the least.

Buck Grove, Ia.



DR. BONNEY'S POST CARD WHICH ENABLED HIM TO
SELL HIS HONEY FOR 10 CTS. A POUND ABOVE
THE COST OF THE CANS.

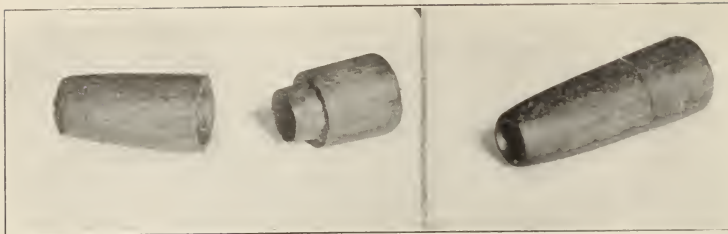
A QUEEN-CELL MADE ENTIRELY OF WOOD.

BY JULIUS MABRAY.

I am sending a wooden queen-cell of my own make. As you can see, the upper part can be pulled off and the lower part grafted with a larva in the ordinary way.

My desire was to have a queen-cell which would protect the unhatched queens from being destroyed by the first queen that emerges. These cells can be given to a strange colony, and, besides, they are safer to handle. They are so small that I can place them between two combs without fear of crushing, as often happens when ordinary cells are used.

I have raised queens in three ways in the same hive, all of which were good ones, but it so happened that two of the best ones came from the wooden cells. This only goes to show that there is no objection to such



A QUEEN-CELL IN TWO PARTS, CONSTRUCTED ENTIRELY OF WOOD.

cells as far as the quality of the queens is concerned; also, in the feeding of the larvae by the bees I can see no difference.

I believe the wooden cells are as much ahead of cell cups as cell cups are ahead of natural cells.

Youngstown, Ohio.

[Perhaps there would be no objection to wooden cells made in two parts, as these are, so far as the actual rearing of queens is concerned, but it would seem to us that they would be more expensive and no better than cells built by the bees from cell cups and then enclosed in wire queen-cell protectors in the ordinary way.

There is another point which may or may not be important. The natural cell is at first very shallow; and if it were best to have a deep cell from the start, it would seem as though the bees would make them this way. —ED.]

EIGHT, TEN, TWELVE, OR SIXTEEN FRAMES—WHICH?

A Plea for a Two-story Light Frame Brood-nest.

BY R. C. AIKEN.

For some time I have noted with pleasure that bee-keepers are finding out the value of large hives; and it has given me much satisfaction, also, to note that the editor is beginning to advocate them. I believe it is a step in the right direction. I wish, however, to offer a warning against what seems to me a mistake; and that is, a change of hives to ten or twelve frame. I think there is not the least necessity of discarding the eight-frame hives for any other width; on the contrary, to do so would be a serious mistake. A hive using eight frames of Langstroth length gives an abundance of lateral space; but if such a hive could be shortened, and the amount cut off added to the width, making a body of equal length and breadth, the horizontal shape and measure would, in my opinion, be more nearly ideal. Then I think the height should be doubled to the depth of two eight-frame hives. So far as the bees are concerned, an ideal hive would be one circular in form, about 12 to 14 inches in diameter, and 2 ft. high. Such a hive would conduce to the best wintering and the most rapid building-up in the spring; would give the greatest

economy, and would best preserve the interests of a colony put into it and allowed to continue there undisturbed by man from year to year, just filling up and swarming at the will of the bees. However, when it comes to manip-

ulating a hive, the form that will more nearly maintain and conserve these ideals, and at the same time allow us to get surplus in the best shape and quantity, must be changed somewhat from the ideal brood-chamber form. The Langstroth frame, if shortened a little, would be preferable; yet with a hive approximately 12 inches wide and 18 inches long (most manufacturers put out a hive about $12\frac{1}{2}$ by $18\frac{3}{4}$), the change is not radical from the ideal lateral capacity throughout; though, as I said before, if we could get a satisfactory super adjustment I should prefer a brood-chamber measuring about 12×12 .

I most heartily agree that the eight-frame Langstroth hive is too small for best results. I have arrived at this conclusion after thirty years of experience, practicing on a large scale, and most of the time with from two to four kinds of hives in use throughout nearly the whole period, both in Iowa and in Colorado. I have myself devised many styles and sizes of hives and various combinations; in fact, I have spent a life of experimenting, and reading nearly all that has been written on the subject of hives in the various journals and books. I have had a very extended experience with both Langstroth and American hives, the former being a long, narrow, shallow style, and the latter almost square, and deeper than wide. Then I have made and tried almost every combination of both of these, including the wide end-bar and close-fitting frames, deep and shallow style, hanging and standing, and also the divisible hives.

The objection has been made to the divisible hives that queens will not lay freely when going from one set of frames to another—that they will start brood laterally rather than perpendicularly in the two sets of frames. I certainly consider this a mistake, as there need be no fear of queens refusing to pass from one set to another if there is not all the room wanted in the first set. My experience is, moreover, that bees will spread up and down, especially down, through two and three sets of combs, making a very high and narrow brood-nest. This is just what we would expect to be the case, and my experience proves it. If any one has had a different experience I am inclined to think it the result of lack of proper management or manipulation. I am led to believe that many apiarists, in using two hive-bodies for a brood-chamber, putting one over the oth-

er, too often put the second one on top, which, in nearly every case, is wrong. The second brood-chamber should be placed beneath the one the queen is occupying. Then with the tendency to store honey above the brood, together with the disposition of both fielders and young bees taking flights to mass about the entrance, the queen will readily follow *down* with her egg-laying.

I have mentioned above the tendency of the colonies to store honey above the brood. Now, note that, if the horizontal measure of the hive is such that ten, twelve, or more frames are used, there is too much room at the sides, and the outside combs catch too much honey. Eight frames are enough, and perhaps really too much. At any rate, I believe it would be a sad mistake to enlarge the hive by adding frames at the side. Several years ago I settled on a divisible hive that is 12 inches wide by 16 inches long, such a hive being about as short as advisable for a satisfactory super length. I use for brood-chambers from two to four of these bodies, the frames of which are 5 inches deep, making respectively from 8 to 16 Langstroth comb capacities. Sometimes I want to use but one section of the hive, but usually I have two when a surplus is being stored. For fall, winter, and spring three seem preferable; though if the fourth one is put on, no harm in the least is done.

Here is what I have discovered is the result so far as the storing of honey and work in the super is concerned, when the brood-chamber is composed of three or four stories. I put the section having the most brood in it at the top (if the section is not full of brood I make it full by exchanging these empty or broodless combs for others that are filled with brood from other sections). Thus all the empty brood-combs which the queen can use are below, and the honey that comes in will then be stored in the super above the section full of brood. I do not mean by this that there will never be any honey stored below the brood, for it might happen that, in a rapid flow, there would be honey stored and sealed in some of the lower combs, but in moderate flows the nectar coming in will be unloaded into these lower combs, and then at the first opportunity be taken up into the super combs before being sealed. Just at a time when the flow is rapid is the time of the whole year when the very smallest brood-chamber is needed. At all other times, especially when brood-rearing is to be encouraged, it is best to give unlimited comb space below the brood.

Now, why should we discard the eight-frame hives when so many bee-keepers have them, especially when they can be made so much cheaper than the wide ones, and when better results can be secured in almost every way by using two of them? I know that two of the eight-frame bodies make the brood-chamber a little large at times; but with care to have the brood massed in the upper body at the proper time, and remov-

ing entirely one of the bodies, fine results can be secured in the super. I know that the double-story brood-chambers will permit better control, and better results will be secured in every way than with a Jumbo body in which the combs are all in one set of frames.

Remember that the two-story brood-chamber requires but one extra body and frames, and it is but little more expensive than a Jumbo body. Then when to this is added a wood-zinc honey-board to confine the queen to one of the bodies when desired for any purpose, we have a far more controllable hive than if the brood-chamber were all in one; and for making increase, taking the extra body away just when it is the right time to contract for super work, is the best way yet.

Mr. Editor, please do not advocate those massive wide hives when a far better result is secured in a double-story eight-frame hive. I do not mean that there are no longer any improvements that can be made in the regular eight-frame Langstroth hive, but I do mean that there is not the least use in having any other sizes of bodies, bottoms, or covers.

Loveland, Colo.

[See discussion of this question in the editorial department.—ED.]

THE TEN-FRAME HIVE PREFERRED.

The Proper Manipulation for Extracted-honey Production.

BY P. C. CHADWICK.

Eighteen years of observation in the East, and seven in Southern California, has led me to some very decided opinions as to the size and management of hives. However, whatever I may pen for these columns from time to time will be from the standpoint of California, which I regard as having conditions peculiarly its own.

I will not try to settle the question of proper dimensions of hives or frames, but will be satisfied to say that, as bee-keeping has made steady advances since the venerable Langstroth gave us the frame which bears his name, and as the great majority of all hives in use are of this pattern, it seems to me we can do no better than to doff our hats to the memory of this grand old benefactor, and discuss some things relative to the capacity of hives for these frames for best results.

The eight-frame hive need not be considered longer than to say that, for conditions as found here, I do not see why any one should prefer an eight-frame for either comb or extracted honey. The ten-frame is the standard, and will doubtless remain so from the fact that there is too much invested in this size as a standard to pay to make a change, if for no other reason.

The burden of this article will be on the ten-frame size, though before discussing this

let me give some opinions on the twelve after three years of experimenting.

The advantage is found chiefly where an excluder is to remain on all the year, or where it is preferred to remove surplus supers during the winter months.

In the first place, a ten-frame is not sufficient for brood room here where the bees begin to breed up early in the year, and do not cease for lack of bloom, as is often the case in the East between the fruit and clover bloom. Where the supers are removed the same condition prevails as under an excluder, so far as brood room is concerned; but the necessary stores are lacking to keep things booming during the cold foggy days that keep the field workers in before the main flow begins; and this is no small item, for we have much of this weather in February, March, and more or less well into May of wet seasons.

To sum up the matter of a twelve-frame hive, I may say that I do not think it has any advantage over the ten-frame where it is manipulated as I describe below, but, on the contrary, has the disadvantage of being bulky and unhandy. The excluder should be removed as soon as the honey-flow is over, and one super left on above the brood-chamber, allowing the bees and queen to have unrestricted freedom of the hive. There is little question but that the tendency of the bees during the late summer and fall is to store largely in the brood-chamber whatever they may secure, where the excluder is left on during that time.

There should be no great hurry to get the excluders back on in the spring. Leave them off until, say, ten days before beginning to extract, for this in itself will have a tendency to hold back swarming by giving the queen plenty of room to keep busy.

Usually brood will be found in anywhere from 7 to 17 frames, and a large number of colonies will have from 10 to 14; in others there will be 7 or 8 frames above and none below. Be this as it may, the queen should be gotten below the excluder; but no effort should be made to get the brood down. The more room below, the better for the future, and the less the tendency to swarm before the combs are ready to extract. If the bees can be kept ahead by the use of the extractor there will not be nearly the trouble with swarms.

Extracting can be done, if necessary, before the brood all hatches, provided it is sealed; and by the time the second extracting is ready, the upper story is free from brood.

A better way, if there are surplus combs, is to place a super of empty combs under the super nearly filled, and allow the remaining brood to hatch while this second super is being filled.

In this way a very large amount of brood is allowed, so that there are bees on hand early. Then with the ten frames of brood space below, the colony will remain in a booming condition during the entire season. Redlands, Cal.

HONEY ADVERTISED BY THE NATIONAL ASSOCIATION.

\$50,000 Would be Needed if Effective Work is Done; When and How to do the Advertising.

BY WESLEY FOSTER.

"What we want to do is to make the housewife *think* of honey when she is ordering groceries." In other words, we want to get honey out of the luxury class as much as possible, and into the staple and necessity class along with sugar, potatoes, flour, etc. This will not be fully accomplished; but what has been done in some small sections of the country can be done in the country as a whole, with the different methods of advertising. By advertising I mean any thing that will arouse people's interest in honey. A swarm of bees alighting on a department-store window on a crowded city thoroughfare is advertising, for it will almost stop traffic, and thousands talk bees more or less intelligently for an hour. The presence of several specialist bee-men in a town will cause comment; and when a community is aware that honey in commercial quantities is produced right at their doors, that community is going to be a large consumer of honey. Honey has been produced in quite large quantities in all the irrigated portions of the West, and the towns in these districts are all good markets for honey. Boulder merchants are not afraid to buy honey, both comb and extracted, by the ton; and a hundred pounds of comb honey a week is sold by some of the large ones.

But this condition can be brought about in the large cities through advertising in papers, and demonstrating in stores and house-to-house canvassing with samples, taking orders for the grocer to fill. Perhaps there is more fear of adulteration in the city than in the country; but persistence and an honest straightforward campaign will break down prejudice and fear.

The whole groundwork of an increased honey consumption consists in developing a steady, firm, and constant demand among the consumers; and to do this we must have a continuous supply of honey of even grade and kind put up in the style of package that the trade demands. This supply must be easily reached by the retailers through the wholesalers and jobbers. Now, this steady, year-round demand can be built up only through several kinds of advertising being used simultaneously. The daily papers and magazines, together with the trade papers to reach the wholesale and retail trade, must be used, and these supplemented by all the descriptive articles we can persuade the dailies and monthlies to have their best writers prepare for their columns. The work of the scientific queen-breeder, and the improvements in apicultural appliances, and, in fact, every branch of bee culture, has undergone a development as marked as any industry during the last fifty years.

With all this use of printer's ink must go the house-to-house work, the demonstrations in stores, and the education of the wholesaler and retailer concerning the nature, usefulness in many ways, and care of honey. The dealer must know all about the goods; and when this is reinforced by a knowledge of the value of honey by the housewife we shall have a combination that will make for greater consumption.

As to whether a campaign of this kind could be carried on without an incorporated company to do the work and make the profit would depend on whether an organization like the National Association could raise the money and conduct a campaign similar to the campaign of the Rice Association, the prune-growers, and the canners. Mr. F. J. Root tells me that these people were satisfied with the results they secured. It seems to me that, if we could get the money for the work, some such campaign would be a good thing to take up prior to the organization of a large honey-bottling and distributing association to operate in every city of any size in the United States. There is this difference, though, that the people who advertised rice, prunes, canned goods, etc., were mainly companies who banded together, and each had a well-put-up article, and could fill the demand at once; while with the majority of the bee-keepers improvement in methods of grading and packing, and the building of a selling plan, would have to be done. Wholesalers and jobbers want their credit and regular discounts, delivered price, etc., while the most of the bee-keepers want their money before shipping the goods, and never figure on giving a discount for cash. Special deals also are wanted, such as a free case with every order for ten-case lots. Then the wholesaler wants the goods to be obtainable in uniform grades and packages the year round. One of the things we bee-keepers would run up against would be the failure to supply the kind and grade of honey desired when the jobber or wholesaler wanted it; then some corn syrup would be substituted, and some valuable honey trade would vanish. We shall have to be on deck with the goods the year round.

It may seem like being hard on the bee-keeping fraternity to say that care should be used in selecting the members of the fraternity who are to share in the benefits of this plan by having their honey sold through the advertising done; but if the National Association, we will say, spends money for advertising honey, the Association must be sure that the members furnish a rich, ripe, clean honey of fine quality. From what I know of associations it would be necessary to know the record and character of the man who wishes to participate in the benefits. Some bee-keepers' honey would hurt the cause of increased consumption more than it would help. Of course, much of this honey is injuring the greater consumption of honey right now, but the damage would be more if it were pushed out into wider

markets through the advertising of the National Association.

If the campaign were to be merely general and not specific there would hardly need be any scrutiny of the bee-man's record, for the housewife would ask the grocer for honey (no special brand), and the grocer would ask his jobber, or buy some honey of a local bee-keeper. In this case the Association would take no responsibility, and the non-contributor to the advertising fund would profit the same as the one who had paid into the fund.

It may seem like a big proposition to raise, say, \$50,000 for advertising; but if we realize the possibilities, and work for it, we should find that the money would soon be back in our pockets with interest. There are some bee-keepers who would pay more than a dollar a ton on their crop into a fund. This sum was suggested by Mr. F. J. Root, and would have to be made larger, for there would be many who would not "come over" with the money.

Boulder, Col.

BEET SUGAR FED ON A LARGE SCALE, WITH NO BAD RESULTS.

BY M. A. GILL.

In an editorial on feeding, Oct. 15, you advise cane sugar, and I want to ask why you specify cane sugar when both the law and custom require the same per cent of purity and sweetness in beet sugar as in cane sugar. I supposed that the prejudice against beet sugar had disappeared when the facts had been made known; and isn't it a fact that the two sugars are chemically the same? I saw a case last year where a man who had spent his life as an expert sugar-boiler of both cane and beet sugar was unable to tell one from the other from samples from his own sample-case when the labels were removed.

I have fed both kinds for years for winter stores for bees, both in mild and severe climates, and could never see any difference; but I have used the highest grade when using either kind. I have just finished feeding 14,000 lbs. of sugar syrup to my bees, as we had a total failure here this season on account of drouth and a scourge of grasshoppers. Of course I fed the very highest grade of sugar made into syrup; but most of the bee-men here used an unrefined and cheaper grade; and if we have a long cold winter that keeps the bees confined for a long time I look for them to have trouble with dysentery, while they will be all right with mild weather when the bees can fly often.

A sugar-factory here is making over two thousand tons of sugar per day that I believe is equal to any sugar made on earth for any purpose.

Longmont, Colo.

[We are glad to have this report, showing that refined beet sugar is perfectly safe for bees. This ought to silence forever all re-

ports to the contrary from those who have tested the matter on only a small scale, and who can not be certain, therefore, that their failures were due to the quality of the sugar used.

We did not intend to discriminate against beet sugar in the editorial referred to, for we were using the term "cane sugar" in a broad sense. As you know, the chemical term *cane sugar* includes the sugar made from sugar-cane, sugar-beet, maple sap, etc.; but not honey, glucose, corn syrups, etc., as these latter come under the general class of *grape sugars*. Perhaps our statement was misleading; but we did not intend it to be so. We have before mentioned that we never make any effort to ascertain the source of the granulated sugar that we use, and we never have any trouble.—ED.]

BEE-KEEPING IN WESTERN AUSTRALIA.

BY C. J. HAESE.

Bee-keeping in the Golden West is quite different from that in America, as we depend solely upon the gum-tree blossoms for honey. Clovers are receiving consideration by the farmers now; but it will be several years before this plant will be of any value to the bee-keeper. In this part of the country the yate gum and red gum are the main sources of nectar, although we get a little from yarrah and white gum, but to an extent hardly worth mentioning.

March is our main month for honey; and if we do not have too much rain during the month a strong colony will average from seven to ten pounds gain per day. We have a honey-yield every year, my average for the last few years being about 200 lbs. of extracted honey per colony. In 1908 my crop would have been doubled had it not been for so much rain when the honey-flow was on. We have rain every month in the year, the total amount for this locality being 30 inches.

This is an ideal locality for apples and pears, but it is too cool for oranges or vines, the temperature seldom going above 90 degrees in the shade in the summer, the nights always being cool. However, we never have snow, and the bees can fly every day in the year except when it is raining.

Italian and hybrid bees do the best here, the ten-frame Langstroth hives being used almost universally. Bee diseases are unknown.

There is not much demand for comb honey. I receive 5 to 6 cts. per lb. for extracted honey, most of which I sell in 14-lb. lever-top tins. The market is limited, for the population of the state is as yet very small, as our country is only in its infancy. However, thousands of people are now coming in from England, a homestead of 160 acres of first-class land being given free to any male applicant over sixteen years of age.

Mount Barker, Western Australia.

COTTON FURNISHED HONEY IN SPITE OF LONG DROUTH.

Although No Rain Fell from June to October, Cotton did Well and Furnished a Fair Crop of Extra-fine Honey.

BY O. SAUNDERS.

The winter of 1908 was mild, and was followed by a rather cool windy spring, which necessarily left our bees much depleted in stores and numbers. June 1 found the colonies in fair condition, and gradually gaining from day to day. The weather was warm and sunny; and horsemint, hoarhound, and various other plants and vines of more or less value, furnished plenty of stores for all brood-rearing purposes, and so we naturally began building castles in the air. The first blooming of alfalfa passed, giving the bees their initial start toward a honey crop. Then cotton began blooming the 20th of June; and when the second cutting of alfalfa was at its best, the way those bees tumbled over each other was enough to stir the blood of a veteran. The only requisite remaining for a bumper crop was an occasional rain; but, alas! the much-needed clouds gave this locality a wide berth, the last rain being on June 10. Then followed the longest drouth ever known in these parts, for not a quarter of an inch of rain fell until the 8th of October, and during this time there were many days when the temperature registered from 110 to 114 degrees in the shade. A great many bees were lost, as well as considerable honey, by combs melting down; but by giving careful attention to the matter, not over a dozen combs gave way in my entire apiary.

At the proper time, the weather being favorable, alfalfa was mowed; and cotton was then our last chance. It did well on our rich bottom land, and yielded a fair crop of the finest honey it has ever been my pleasure to see. It was so thick that it was almost impossible to extract it, and entirely out of the question to strain it through even a single thickness of cheese-cloth. It was light in color, mild in flavor, and very heavy; and in my opinion it was superior to any honey ever shipped to this locality, not excepting even the guajilla (or cat-claw) honey of the Southwest. The long drouth and consequent absence of all other bloom enabled us, I believe, to get a purer cotton honey than we had ever been able to secure before.

Again, in the late fall, when the weather began to get cool, our cotton took what we farmers term a "second growth," soon blooming profusely; and by accident, rather than otherwise, we got also a fair fall crop. During this long drouth, when cotton and every thing else had ceased blooming, we extracted the entire crop; and as we made rather poor work of it, owing to the honey being so thick, the supers containing the extracting-combs were placed back on the hives indiscriminately to be cleaned up,

some of them having three or four supers, others only one or two, while a few colonies got none at all. Now, bees with us are a side line; and as we were very busy gathering other crops we gave our colonies little attention until about the middle of October, when, as we were passing through the yard, we heard the "busy hum" that, to the practiced ear, speaks louder than words. Kneeling down beside a strong colony, a pleasing sight met our eyes. There was the long line of "ventilators" reaching clear across the entire entrance, while a perfect stream of field bees were tumbling down on the alighting-board, loaded with honey and pollen. This lasted with little cessation until into November. The colonies having plenty of empty combs filled something like two supers each, while others, whose combs had been cut out for bulk comb honey, did hardly half as well, as no foundation had been put in the frames.

By Nov. 15 every brood-chamber was filled with brood and honey to its fullest capacity, the bees working and the queen laying as in the spring. Therefore the winter of 1909 had no terrors for the bee-keepers of our section.

Trenton, Texas.

LACK OF HIVE VENTILATION CAUSES FOAMY HONEY.

BY I. T. SHUMARD.

In the July 15th issue, p. 440, a discussion on ventilation is invited. From past experience I am convinced that *good* ventilation not only retards swarming but that it has considerable to do with the quality of honey. I don't remember that any writer has advanced that theory; but if so, I think it of enough importance to mention it again.

Some twenty years ago in Missouri I let our minister have some bees. He built a small tight bee-house with quite a small entrance. When full of honey he called on me to rob them. The unsealed honey was frothy and blubbery, with a sour taste, and the sealed was very dark and inferior. We wondered at the time why it was, when ours, only two miles away, was so nice.

Occasionally I have seen a little foamy honey since then; but this summer I cut a large bee-tree near one of my out-apiaries. The entrance was small, and right at the ground, and up through rotten wood two feet to the cavity; the tree was what is called lighted—that is, dead, hard, rich pine. It was a very solid tree, and about four inches thick to the hollow. I got a small wash-tub full of honey, and not a pound fit to eat, and that within half a mile of where I had taken thousands of pounds of nice honey. Still, I couldn't think why it was. Since then I came across a hive with some of that foamy honey. I noticed the entrance was almost closed; then the idea struck me, it was all for want of ventilation.

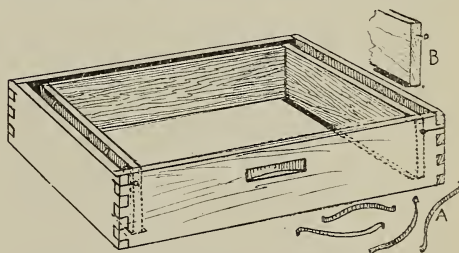
Osprey, Fla., Sept. 15.

HOWELL'S IMPROVED COMB-HONEY SUPER.

BY CHAS. HOWELL.

During the field meeting held at my place on June 29, several of the prominent bee-keepers of the lower part of New Jersey pronounced my super a good thing, and, for my own part, in all my twenty years' experience I have never been able to remove honey from a super as rapidly as I can from this one, although I have tried almost every form of super brought out.

The advantages of this style of super are plainly shown by the illustration. It is a regular deep dovetailed super for 4×5 plain sections, using plain bottom slats 16 inches long, and fence separators, the same length, made to order, also one plain follower. The bottom slats are supported by tins nailed on



the lower edge of each "compression board," which boards are $\frac{3}{8}$ inch thick, and supported by wire nails driven into each end through the saw-cuts in the sides of the super. This sliding supporting nail allows the boards to be forced up against the sections by means of the ordinary flat springs.

Another good feature of this super is the bee-space all around the sections, which the bees use freely, especially when supers are tiered up. The super costs no more than any other.

Hackettstown, N. J.

[An idea similar in principle has been suggested before. We believe the idea is a good one, however, and we do not know why it has not come into general use. It is really a super within a super, the walls of the inner one made capable of being spread apart.—Ed.]

AN IDEAL CELLAR THAT DOES NOT GIVE GOOD RESULTS.

[The following letter was rather a puzzler; and, although we believed the quality of the winter stores had something to do with the failure, we decided to submit the question to a number of experts on cellar wintering. We have not received replies from all to whom we wrote; but those which have come in up to date are appended.—Ed.]

I am very much disappointed with results of wintering bees in my cellar, which I thought was an ideal repository for that purpose. The cellar is under my residence, built of stone, has a cement floor, and keeps a temperature of near the 45 mark; but with all this my bees are restless. Last winter

they consumed less than 8 lbs. of honey per colony, and yet some had dysentery; all were very, very damp, and some were moldy. I could not account for this condition unless they lacked ventilation, as my cellar is very dry. Where have I failed?

Elroy, Wis., Sept. 27. CHAS. SHELDON.

From the brief description given, I judge the trouble is not with the cellar. If Mr. Sheldon will allow a distance of two or more inches between the bottom-bars and the bottom-board I think he will have no further trouble.

G. M. DOOLITTLE.

We do not like to cement our bees in a "box," as it would seem Mr. Sheldon has his. The bottom and sides of his cellar are likely so well cemented that the moisture from the bees has no place to escape, and, consequently, he has wet moldy hives and combs.

See that the cellar is dark. Give a little ventilation and allow the temperature to reach nearly the 50° mark. A cellar in dry sandy soil, with side walls of stone, *without mortar*, or simply boards for side wall and sand bottom, makes the ideal place for wintering bees. The experience of many successful Michigan bee-keepers has shown that "close to mother earth" (dry sand) is the secret.

E. D. TOWNSEND & SONS.

It is difficult to be very sure as to the trouble in wintering, with no more complete knowledge of how the hives were ventilated. I should say, however, that the hives either were not sufficiently open or that the place was so dry as to make the bees restless, and so cause disease.

J. E. CRANE.

"Very, very damp" hives in a "very dry" cellar confirm the suspicion of lack of ventilation *in the hive*. Have the entrance two inches deep by full width of hive; or leave usual entrance with ventilation at top; or leave hive entirely open, either top or bottom.

C. C. MILLER.

I would attribute this largely to improper food—perhaps honey-dew. Contract each colony to the comb-space it will cover; give not less than ten pounds of sugar-syrup stores (to carry them through the period of confinement); leave a cloth or honey-board, but not a painted cover, above the frames with a cushion for warmth above that. Have the entrance wide open, and leave the bees undisturbed and in the dark. Under these ideal conditions the bees should winter well in the cellar mentioned.

R. F. HOLTERMANN.

TANGLEFOOT HONEY NOT SUITABLE FOR THE BEES.

BY J. D. YANCEY.

Losses of bees have been reported, due to tanglefoot honey. We had this trouble, although not seriously, in South Texas, when there was any quantity of either tanglefoot

or goldenrod honey gathered. It never affected the bees in the fall or winter; but just as soon as spring started they would begin to dwindle, and continue to do so until settled warm weather brought plenty of new honey. I do not think we ever lost an entire colony from this cause; but it may have been due to the fact that our honey never granulated, and the hives generally contained a quantity of good honey.

One can readily detect the presence of new tanglefoot honey in the hive, as it has the same smell as a field of the weed in bloom.

Those who have had this experience would do well to extract this honey and feed back sugar syrup. It can be disposed of to the biscuit companies for almost enough to pay for the sugar; and the assurance that the colonies will be clean and healthy in the spring will surely pay for the trouble.

Bridgeport, Wash.

SELECTION IN BREEDING.

Breeding Horns from Cattle Not the Same as Eliminating the Swarming Instinct in Bees.

BY RALEIGH THOMPSON.

A good many have been writing about breeding tails from cats, horns from cattle, etc.; but these writers have been thinking of one thing and writing about another. Has any one ever heard of a poultryman trying to breed hens that would not lay, or of a stockman trying to breed a non-breeding animal? The bee-keeper wants a queen that will lay eggs by the thousand. Now, while it is true that hens do not swarm to keep up a supply of hens, nor do animals swarm to keep the stock from becoming extinct, colonies of bees must swarm, for that is nature's way of keeping them from dying out.

In poultry there are male and female for increase; but among the bees the male and female are for increasing the number of bees instead of directly increasing the number of colonies.

Suppose a colony were put in a box car, and the queen lived for twenty years. If this colony were put on to six combs it would swarm when the honey-flow came on. Man may breed wings and legs, and even heads from bees, for all I know, but he will never produce a non-swarming race.

Underwood, Ind.

Honey-dew from Oak Leaves this Season.

Please advise me what the oak leaves I send have on them. I wonder if it can be honey dew. As it is very late in the season, it has a sweet taste to it. I have an oak-tree in the front yard, and it seems to be covered with this secretion. Bees are doing well this fall. Honey is retailing at 18 to 20 cents.

Kewaunee, Ill., Oct. 3.

L. PETERSON.

[The saccharine deposit is the work of aphides, no doubt. When the bees gather it and store it we call it honey-dew. We have seen very little of it this year, although last year there were immense quantities of it reported from all parts of the country.—ED.]

Heads of Grain

from Different Fields

Sealed Covers, and Eliminating the Clustering-space Above.

After much study of the matter of outdoor wintering I would offer the following for discussion. It would seem that there should be a correct solution of every problem, and this among others.

Considerable difference of opinion exists in regard to the arrangement of the top of the hive for winter, one man advocating making it air-tight, so far as he understands that method, while the next man says put on loose stuff and raise the cover $\frac{1}{2}$ inch, and there are many others.

Let us study the conditions. The bees maintain, under favorable conditions, a given temperature within a space proportioned to their numbers. If their numbers are less, their ability to warm a given space is proportionally less. The logical thing to do is to make the space suitable to their number, but this can not always be done.

We know the bees try to make their winter home air-tight, and there can be no mistake in following nature's teaching; but there can be no half-way business about it, for the following reason: If there are any vacant spaces left in the arrangement on top (whatever that may be), into which the moisture-laden air can penetrate and there condense its moisture, it will be seen at once what the condition will be. Now, if the covering or packing be sufficiently porous, so that a current of air can pass through, however slowly, then the air-current, which will be warmed by the bees, will keep the mass of this porous material above the temperature at which the moisture will condense—that is, excepting the topmost layer—and may be even that if there are enough bees below to furnish heat.

But think a moment what such a current of air means—just that much cold air to be warmed with honey consumed, and, in case of a small colony, a lack of force to accomplish it, with such consequences as you can imagine.

Again, in case of so-called air-tight coverings there has probably been this shortcoming. There may have been, and I am convinced that it is the fact, considerable vacant spaces entirely within the air-tight covering, into which the moisture-laden air of the hive could and did penetrate; and these spaces, being necessarily cut off or separated from any warm circulation, the moisture there condensed makes the whole mass damp and unwholesome.

The conclusion to which I have come is this: Nature will be best followed and served by a compartment so arranged as to be *air-tight, non-absorbent*, and, consequently, as dry as can be, and of a size to suit the tenants. By means of division-boards, solid and close-fitting, we may adjust the size of the winter sleeping-room fairly well. By a simple arrangement consisting of only two thin boards to lay flat and tight down on top of the frames, and fitted snugly to the sides of the hive-body all around, leaving a space only half an inch wide between the edges of the boards across the hive at about the middle, and right-angled to the frames, we enable the bees to make their nest as tight as they will. This space across the frames is for a highway by which the little people can travel from frame to frame in the warmest part of the house. These boards are just thick enough to take up the bee-space above the frames, and come into perfect contact with the super-cover, which is to be tacked down on top with two or four small wire nails. The hive can then be blanketed, as may be preferred, without any possibility of dampness from the inside. The general idea is to confine all the heat, and afford no place for dampness to collect, there being no absorbent material, and no air-spaces not easily warmed naturally. By this plan the usual necessity for top ventilation is done away with. An ample, properly adjusted entrance is the only requirement. Now please start the music.

B. KEEP.

[The objection to your plan is that the cluster of bees, as a general rule, stands directly over the entrance to a Langstroth hive. As the season pro-

gresses, the cluster moves backward. One vital defect in your plan is that, during the fore part of the season, and the latter part of the season toward spring, the bees would be removed from the gap that would permit them to pass from one comb to the other. It is vitally important that the bees have a space all over the top of the hive by which they can move from one comb to the other. If it were not for this your plan of eliminating the space above the frames might be all right.—ED.]

A Suggested Plan for Making Increase; How to take Care of a Weak Colony that is Being Robbed.

Early next spring I wish to increase my apiary artificially. I have read several methods for doing so, which seem to me to be a good deal of trouble. I should like to know what you think of the following method: Go to the hive you wish to divide (the bees being ready to swarm naturally, and so having queens ready to emerge from cells); set it on a stand a few feet away. Now place a new hive, filled with foundation, on the old stand; open the old hive, and remove about half the combs, bees, etc., and put them in the new hive, removing as many frames of foundation as is necessary to make room for those filled with comb and bees. Put the frames of foundation in the old hive and close it. Now close the new hive with the swarm, and it is done. Be sure to have at least one queen-cell in the new swarm so the bees can have a new queen as soon as she is ready to emerge. It does not matter which hive the old queen is in, since either one of the colonies can rear another one.

When numbering bee-hives, would you paint the number on the hive itself or tack on a tag having a number on it?

What can I do for a rather weak colony that lets the robbers come in after I have contracted the entrance so only one bee can pass? It has a good queen and also some brood. The bees are all right in the warm part of the day; but it is in the early morning that they can not keep a robber from going in every now and then.

Rapidan, Va., Sept. 30.

G. H. LATHAM.

[Your plan of artificial swarming is all right, with the exception that we would give the laying queen to the swarm. A colony without a good queen, according to our experience, does not do quite as good work as one having a queen.

It is better to use separate tags, each having a number on it, than to paint numbers on the hives. It sometimes happens that you will desire to change the number on the hive itself.

A weak colony that will not defend itself when the entrance is contracted down so that only one bee can pass at a time is not of very much use. We would advise you to give them a frame of hatching brood from some vigorous Italian stock. A few young Italians will put new life in the hive. At the time you wrote, possibly your queens had quit laying, and you have no hatching brood. That being the case, we would advise you to unite your weak stock with some stronger one. If you have no place to put an extra queen you had better kill the one in the nucleus.—ED.]

Boneset as a Honey-plant; an Important Lesson in the Bee Business.

I am sending you a package of weeds known here as the "fluxweed." Will you please inform me what the botanical name is? In this locality it is the finest honey-producing plant we have. The honey is of the finest flavor, and as clear as that from white clover.

The bees did nothing here until the last week in August. In four weeks they put in a good strong store for themselves, and all that were strong put up from 10 to 50 lbs. in the supers. Until the last week in June I fed about half of my colonies to keep them from starving. Then I learned the best lesson of my life in the bee business, and that is, that all colonies must be kept strong and full of bees if they are to lay up any surplus when the honey-flow starts up. But I did not learn it in time for this season; but I'll certainly attend to that next year. About half of my colonies were too weak to benefit me this season; but all but two or three have put in enough for themselves. I am an amateur in the business. I have only forty colonies, but intend to double that number next

spring. I have been a teacher for thirty years, and shall retire after another term and spend the rest of my days as an apiarist.

Kewanee, Mo., Oct. 14.

E. T. JOYCE.

[The plant is one of the *Eupatorium* family. I think it is commonly called "boneset," and some seasons it yields a large amount of nice honey.]

The lesson you speak of is certainly an important one. It is what Langstroth called the "sheet anchor" in bee-keeping—strong colonies. In your case you had good reason to be discouraged if you did not get any honey until the last of August; but it often happens in many localities that the fall flow of honey is the most important of all.—A. I. R.]

An Easy Way of Putting Bees in Shipping-cages with Queens.

The editor has described and illustrated his method of putting bees in mailing-cages, but I believe I can beat his plan. I make a wire-cloth cage that will just admit the end of the mailing-cages, leaving the other end to be closed with a plug or the finger. I place this open end over the queen, and as many bees as possible; and if more are needed I



scoop them in. A little smoke at this end will drive the bees up to and into the mailing-cage through the hole in the end. If they do not go up fast enough I dip the end of the cage into a cup of water and slowly lower it into the water, so that the bees are forced up into the mailing-cage.

Oswego, N. Y.

F. H. CYRENIUS.

[We doubt very much whether you could fill a cage much faster by your method than we do by ours, for it is surprising how quickly one accustomed to the work can pick up the bees and get them into the cage. Then by your plan you are not likely to get bees of the right age. By the "hand-picked" method young bees can always be secured. Your idea is quite ingenious.—ED.]

A Simple Set of Grafting-tools for Queen-rearing.

The drawing shows a set of my grafting-tools. While I am only an amateur, I would give five dollars for a set that would work better. On page 496, August 1, Mr. Pritchard tells of the trouble he has in getting queens to hatch from queen-cells in cages. I make my cages round to fit the Pratt cell-



cups, and then slip these over the cells as fast as they are capped. I hang a frame of them between two frames of brood, and I hatch almost every one of them—at least every one that would hatch if uncaged.

Salem, N. J.

HENRY BASSETT.

[A number have suggested a pin-head transferring instrument, but we do not remember to have seen such a tool made from a feather cut down. It would seem as though this would be a good thing.]

Mr. Pritchard also says, page 496, that queens that emerge in cages commence laying two days later than queens that emerge directly on to the combs at any place.—ED.]

That Sour Smell in the Vicinity of Hives.

On p. 670, Oct. 15, I see a correspondent writes in regard to a sour smell which he noticed in the vicinity of his hives. I wish to say I noticed a strong odor, which I can compare with nothing better than buttermilk, about my own hives, but only during the fall honey-flow while the bees were just tumbling over each other bringing in the nectar. This odor may have lasted a week or ten days, and disappeared in a day or so when the rush was over.

I examined some frames, but could not see any thing to attract my attention particularly. May not this odor be from some natural change taking place in the fresh nectar? or might it not be the natural emanation from some particular kind of nectar? At first I was inclined to be anxious on account of it; but as the bees kept right on working, and every thing appeared to be normal in the hives, I concluded it must be a natural thing, probably due to one or both of the above causes, and ceased to worry.

Hoboken, N. J., Oct. 20.

C. D. CHENEY.

A Bee-demonstrator as Interesting as a Snake-charmer.

I am sending you a copy of the program and other literature used at the Maryland State Grange picnic last year. I gave a bee demonstration, the Grangers inviting me, and advertising it as an event on the official program. I thrilled a crowd, estimated to be about 8000, on Wednesday and again on Friday, doing stunts that were considered "simply marvelous." The crowd played a trick on a speaker that I considered more marvelous than my stunts. One of Maryland's most noted orators was just in the middle of a good-roads speech when the crowd caught sight of me unloading a colony of bees. Practically every one of them arose and made a rush for the bee-cage. The orator had to quit, and nothing would satisfy the crowd but bees. The officials told me to go ahead—that the speaker would finish later, and he did. The newspaper men put my name in "scare heads" as "The Bee Charmer," "Bee Wizard," etc. After the first demonstration the crowd nearly mobbed me.

Taneytown, Md., Aug. 3.

R. A. NUSBAUM.

Honey Resembling Brown Sugar Not from Cantaloup-blossoms

On page 635, Oct. 1, R. V. Paschall asks about the source of his thick candied honey resembling common brown sugar, and suggests cantaloup blossoms. We have considerable of it here, but no cantaloups. One man put a swarm into a new hive, and in three weeks every thing was filled up solid with it. We called it honey-dew, but it is different from the honey-dew secured in other localities. It is too thick to extract, and the flavor is not first-class. If it is not honey-dew, what is it?

Torrington, Ct., Oct. 13.

WALTER H. HULL.

[It might be honey-dew, as you say. Honey-dew varies greatly in flavor and color. Some of it is very fair eating; but most of it is hardly suitable for table use. The fact that the honey of which Mr. Paschall wrote was said to be better than clover does not prove that it was not honey-dew.—ED.]

Queen Caged for Three Months.

I had a funny experience in introducing a queen this summer. I put a fertile queen in a Titoff nursery cage alone in a queenless hive, meaning to let her out in a few days. I forgot all about her when I left at the close of the season, June 15. My partner and I went to the apiary Sept. 16, and were looking through the bees, and found the queen in the cage. She had been there three months. She was alive, and seemed to be all right, good size, and lively. The bees had fed her all of that time. I will watch her and see what she does next year. I let her out of the cage with the bees, and they accepted her.

Pasadena, Cal.

GEORGE LARIMAN.

[This is not an unusual case. We have had queens that have been confined thus much longer. Of course, in such cases the bees having accepted the queen keep her supplied with food.—ED.]

Bee-keeping for Farmers' Wives.

I have 47 colonies this year, and have taken off 728 lbs. of section honey. I wonder why more of the farmers' wives do not keep bees, as they pay better than poultry, and give us more clear profit than cows. I take nearly all the care of mine, as my husband has other farming to do.

Nineveh, N. Y., Sept. 28.

SUSIE F. COLE.

[Some farmers' wives, in some localities at least, could earn more money with bees than with poultry.—ED.]

Our Homes

By A. I. Root

And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.—GENESIS 2:7.

Dear friends, this is going to be a *home paper*. After you get through with it, see if you do not agree with me. A few issues ago I gave you a talk about nightgowns and keeping our bodies clean; and, by the way, I do not know but I have risen earlier since I wrote that article, because as soon as I wake up I look forward with enthusiasm to my open-air exercise without a rag of clothing to encumber me. Our sleeping-rooms are cold; and when I first get out of bed it is cold work. But just as quick as that nightgown drops from my limbs I commence a vigorous rubbing just as fast as I can make my hands go. Every portion of my body is rubbed with the naked hand until the friction warms me up all over. Then I put on my clothing for the day, and feel full of enthusiasm for whatever needs to be done, the minute I get out into the open air; and *pure cold air* is to be my topic just now.

Mrs. Root and I have not yet arranged for an outdoor bedroom; but my two boys and their families all sleep outdoors, even down to the youngest, and all enjoy it. Now, I suppose every one of you can get hold of *McClure's Magazine* for August, without very much trouble. You had better do it, even if it does cost some trouble and expense; and when you get it, turn to the article entitled "Oxygenizing a City; an Attempt to make Two and a Quarter Million People Work and Play under Sanitary Conditions. By Burton J. Hendrick."

This exceedingly interesting article tells first about the trouble they had in keeping their monkeys from getting sick in the Chicago Zoological Garden. They finally called in a pathologist, Dr. W. A. Evans, and he went to studying monkeys in order to see what made them so subject to tuberculosis. In talking with the manager of the Zoo, whom we will call "Cy" for short, although his name is De Vry, Mr. E. gave his idea of the matter as follows:

"Just take my monkeys, for example," said Mr. De Vry. "I find that the average temperature of the places from which they come is eighty-five degrees Fahrenheit. Now, the thing to do, of course, is to keep them always in eighty-five-degree air. In the summer-time they get this easily in the open. When winter comes, I take them all inside, turn on the steam, and keep their quarters at about eighty-five degrees. They like it too. Look here," and he led the way into one of the modern steam-heated monkey-apartments. Here twenty or thirty shivering creatures were making heroic efforts to keep warm. In one corner, a large radiator was sending forth enormous gusts of hot air, and a wooden shelf on top of this radiator was the most popular quarter of the cage. Every inch was filled with huddling monkeys rapturously basking in the heat, which was not far from one hundred and twenty-five degrees.

"Your scheme seems logical enough, Cy," said Dr. Evans. "You are simply trying to do for your

monkeys here what nature does for them in their own homes. But it doesn't seem to work very well. I think we had better try something else."

SICK MONKEYS GET WELL OUT OF DOORS.

The next fall the Chicago Zoo purchased its usual winter consignment of monkeys. Nearly all of them were fresh from the tropics, and consequently were in fine physical condition. As usual, however, there were a few animals that had lived in this country long enough to have become physically degenerate. They were sad and mangy specimens, having practically no hair, and with the skin drawn tightly around their bones—feeble, timid, and feverish. At Dr. Evans' suggestion these were placed aside as safe subjects for experiments.

"Take your twenty healthy monkeys inside, as usual, this winter," he told Cy De Vry, "but keep the five sick ones outside. It will be interesting to see what will happen."

"But they can't stand it; the cold air will kill them," protested the keeper.

"If it does you won't lose much—or the monkeys either, for, at best, they can live only a few weeks."

As the winter came on, these five sick tropical animals were kept in a place where they were constantly exposed to its chilling drafts. They became perforce fresh-air cranks. A thatched shelter was provided, into which they could retreat when the weather was too icy, but no artificial heat was supplied. Strangely enough, except at night, when they slept under it, the invalids seemed to care little for this shelter.

With the gradual approach of winter the monkeys showed as natural an inclination for the cold open air as their healthy brothers did for the hot drafts inside the monkey-house. Presently there appeared upon their emaciated bodies a faint sprouting of hair, which grew thicker as the weather became more severe. Gradually the sluggish creatures started into life; instead of huddling in corners, they began to climb and jump about their cages. Before the winter was over, all of them had thick brown furry coats; their muscles had grown large and strong; they ate eagerly, and manifested an increased desire for the favorite sinian pastime—fighting. They became the most popular curiosities of the Zoo. Nothing in years had delighted visitors so much as what had now become an every-day sight—one of these tropical animals, in zero weather, seated upon a snow-bank, contentedly eating a banana.

ALL THE INSIDE MONKEYS DIE.

But the twenty monkeys that, early in the winter, had entered the steam-heated monkey-house in splendid physical condition had not fared so well. By spring not a single one was alive—all had died of tuberculosis. The artificial reproduction of "tropical conditions" had killed them, as it had killed hundreds of their predecessors. The five outdoor animals, however, never showed the slightest trace of the disease.

Now, friends, you can afford to read the extract I have given above, several times. Just think of it. Monkeys are tropical animals. One who did not know would say they would die in a few minutes if placed outdoors on a snowbank*; but they did not die when put to the test, and, more wonderful still, the sick ones put out in the open air all recovered, while those that were kept in apartments warmed by means of radiators (*artificial* heat, mind you) *all* died. Let me give you one more extract:

As a result of this reform there's no more tuberculosis in the park. In five years there has not been a single death from this disease. In every way the animals show an increased vitality. Or—

*No wonder the spectacle of the monkeys on top of the snowbank, eating bananas, with the temperature down toward zero, attracted so much attention at the Zoo. Well, chickens and children also can be happy outdoors while at play under similar conditions if they are started right and cared for in a sensible way. Of course the chickens and children should have a good warm place to get into whenever they feel the necessity of getting warmed up.

dinarly monkeys do not breed in captivity; in the Lincoln Park Zoo, however, monkey babies are by no means rare. One, which was born last August, spent the entire winter outdoors, with a most invigorating effect.

What do you think of that? When they turned the whole outfit out in the open air there was not a single death from disease in *five years*. Now for a moral that comes home to us poultrymen. Just as soon as I took up poultry (so vehemently) four or five years ago I became more and more convinced every day, that the chickens should be outdoors—yes, even *little* chickens; and when I had decided that artificial heat instead of the heat of the mother-hen was a mistake and a blunder, our good friend Philo came to my aid with his discovery. Now, do not misunderstand me. Chickens just hatched must be kept warm; but they must also have plenty of pure outdoor air, just exactly as they get it from under their mother's wings. I have not tried newly hatched chickens in the fireless brooder at a *zero* temperature; but I think Philo demonstrated, even before our college professors did, that it can be done; but of this I am sure: That thousands and thousands of chickens are sent to a cruel death by *mistaken kindness*, just as the monkeys were. Again and again I visit poultrymen (and poultrywomen too) who are hurting their chickens by lamp-heated brooders; yes, I have repeatedly seen them shut in these artificially warmed brooders when the sunshine outdoors gave an abundance of heat without costing a cent. Two years ago I had a lot of chickens that did not seem to do well. They had an abundant opportunity to run outdoors, but they just kept inside and hugged up against the hot-water pipes. After several had died, and I saw they were all going to die, I took away the lamp and hot-water pipe, and just put a warm blanket over their backs. Of course they peeped, and made quite a fuss for a while, but in a day or two they went outdoors and ran about in a way that chickens ought to do, and all at once began to grow like weeds. They were like the monkeys that kept crowding to get over that hot shelf. They had gotten into an unnatural condition, by unnatural surroundings. Now, my good friends, I hope you will remember what I have said about chickens; and I rejoice to know that just now there is a great wave starting toward "fireless brooders," and it is extending all the way from Maine to Florida. It will probably take some time for the manufacturers of the heated brooder to get over their notions (or, perhaps we might say, to get rid of the stock of lamps and fixings they have on hand), but they are coming to it.

Now, I think you will all agree that *monkeys* and *chickens* are of small account compared with the bodies of schoolchildren and grown-up men and women. After Dr. Evans had succeeded in curing the monkeys, and making them stay cured, he turned his attention to humanity in the great city of Chicago. He was a rising young man, and the mayor of Chicago had the good sense to

appoint him health commissioner, and he commenced the study of conditions then existing in that great city. The author of the articles gives us some of the *advantages* Chicago now enjoys:

Few realize—the people of Chicago least of all—the services rendered by an expansive body of water like Lake Michigan in purifying the air supply. It provides the air with indispensable moisture; and it acts as a huge filtering-plant, picking up dust particles and bacteria, and leaving for human consumption the unadulterated oxygen. Then from the prairies comes the wind, that indispensable adjunct to thorough ventilation; for good breathable air, as all authorities insist, is, first and always, moving, circulating air.

Of course, they have the black smoke from 10,000 factories and 26 great railroad systems; but there is a *chance* for pure air, after all. And, by the way, Chicago has been doing some wonderful things in working for the health of its inhabitants. See the following:

Everywhere modern science has made wonderful progress in combating the diseases caused by bad water and bad food. Take the city of Chicago, for example. It built its famous drainage canal, and, at a stroke, cut down its typhoid rate about eighty per cent.

In Dr. Evans' researches through the city he went into the schoolrooms. Here is one of the headlines I found in this article about our cities:

HOW CHILDREN ARE "KILN-DRIED" IN THE PUBLIC SCHOOLS.

I never thought of it before, but Dr. Evans tells us that one of the great causes of catarrh and other diseases of the breathing apparatus is that dry air has so great an affinity for moisture. Do you remember the way the women-folks tell us, that some days their clothes on the line will dry very quickly, and again they will hang there all day long and not dry out at all? Well, dry air, especially this *artificially* dried air, is constantly *seeking* moisture. If it can not find it anywhere else it will take it from the mouth and nostrils of breathing children; and this drying process causes these sensitive organs to crack and become sore, and thus invite microbes, bacteria, etc. Some of us have been laughing at T. B. Terry because he carries four or five pailfuls of water every day to fill up his "humidifiers" as he calls them. Terry keeps every cubic foot of air moistened up every wintry day, in every room in his house that is warmed by artificial heat. When I stood by his wondrous display of rank and thrifty house-plants that stood in his front window he said something as follows:

"Mr. Root, the outcome of my humidifiers that evaporate several pailfuls of water a day is these beautiful plants grown in a natural and healthful atmosphere."

Then, pointing to his wife, who stood near, he said, "Here are the beautiful healthy plants;" and, with a comical look on his face, he added, "and there is a beautiful healthy woman, the result, like the plants and flowers, of an atmosphere that is constantly *humid* as well as warm." And he told the truth. Mrs. Terry, even if she is

toward the 70's, is a bright, healthy, come-looking woman.

I do not know whether Dr. Evans has been reading Terry's writings or not; but here is what he said about giving the children in the Chicago schools a *humid* instead of a kiln-dried atmosphere for breathing.

As a result of this agitation the Chicago educational system has originated a new verb—"to humidify." The meaning is simple: All hot air, before entering the schoolroom, is passed through jets of water or of steam. It now picks up its moisture in "humidifying" chambers in the basement, instead of in the throats and nasal passages of the children and teachers.

My good friend, I do not know just where you are going to live and breathe during the coming winter, but let me impress on you the needed importance of insisting on a humid atmosphere as well as warmth. Terry tells us that if the air is sufficiently damp we can be comfortable five or ten degrees lower; so there is an absolute saving in fuel by watching the atmosphere of your *home*, as well as the horses, pigs, and chickens, every day of your life. Now, they have some children in Chicago who are threatened with tuberculosis; and, may God be praised, they *are* succeeding in making them *well*. There is a picture given of the outdoor school on the roof of the house during the winter time, and you can well afford to invest a dollar in a copy of this magazine, if you can not get it otherwise, just to look at the picture of the consumptive children in their open-air schools. Here is what is said about it:

On the roof of one of the Hull House buildings the United Charities of Chicago have established an open-air school for tuberculous children. Here, on the most freezing winter days, are fifteen invalids from the stockyards district, clad in close-fitting Eskimo suits—the girls, like the boys, in trousers—with moccasins and blankets, bravely fighting for health and life. They are gaining in weight and color, and, like the children in Mr. Watt's open-air school, are making abnormal progress in their lessons.

So much for the schools. Dr. Evans was given authority to inspect one of the underground bake-shops of Chicago.

An inspection showed that there were about fifteen hundred bake-shops in Chicago, nearly all of them below the pavement-line. They were dirty, begrimed catacombs, heated with blazing red furnaces, thickly populated with white-garmented, pasty-faced, slow-moving figures. These pallid inhabitants were usually panting for fresh air; in many cases no provision had been made for it at all.

What do you think of the above? By the way, the enterprising managers of shredded-wheat biscuit saw the above and copied it for an advertisement in the *Sunday School Times*. They suggested that, instead of buying bread made under such conditions, the people should buy their biscuit made in their great sunlit bake-shop that cost a million of dollars, at Niagara Falls. Well, the bakers broke out in a tremendous wail when Dr. Evans said they must get out of their filthy underground apartments, and then the city authorities had a muddle on their hands. But all at once the mighty forces of nature interposed in the shape of a big rainstorm or cloudburst, and the water ran into those dirty basements in such a flood

that the inmates had to get out in a hurry; and now Chicago's bread is baked above ground. At one of their trade conventions one of the number got up and said, "We are (in consequence) better men, better citizens, and better *bakers*."

Dr. Evans went everywhere. He went into the people's homes. He went into the nickel theaters, and raised a rumpus. He put up posters in the street-cars. One of them reads, "Which way are you going—to health and long life or to consumption and early death?" Reader, how does the above hit you? It almost makes one laugh to think how near Dr. Evans has come to the title of Terry's new book, "How to Get Well and Live Long." Another card reads, "Closed windows mean dirty air, and dirty air poisons the lungs and means death."

The last sentence in this exceedingly valuable article is as follows:

Manifestly, a material reduction in the death rate from tuberculosis will take time; but the figures show that Dr. Evans is already making headway. Before he started his campaign, there were annually 187 deaths per 100,000 from this disease, whereas last year this had been reduced to 174. If, as the sanitarians dream, the ideal city of the future is the one in which contagious disease will not exist, the prime characteristic of that future city, as Dr. Evans has demonstrated in Chicago, will be freely moving, clean, fresh air.

Dear reader, even if there is a good deal of filth about us, even if we were formed of "the dust of the ground," as in our text, is it not also true that the great Father above "breathed into" all of us "the breath of life"? and not only that, our text tells us that "man became a living soul." God has given most of us, at least, a good breathing apparatus to start with. If he didn't, our parents have been more or less to blame because they did not do *their* duty. But we may rejoice that he has given us good common sense; and we can certainly shake off sickness and disease (and perhaps even *death* for a long while), if we get up and bestir ourselves; and I am sure we can, each and all of us, unite in praising his holy name for the light that is being shed on us in recent days, in regard to this very matter of keeping *healthy* and *happy* and *well*.

THE LAND OF THE "SUNDOWN SEA," ETC.

Our Homes interests me more than all the rest. Money is not every thing with me, and I rejoice to see that there are patriotic men and women in the country who have the welfare of the nation at heart, and are not afraid to speak the truth. Most of our preachers seem to be afraid. Of course, they are depending on a salary for a living, and they know pretty near how far they can go without offending their congregation.

We must try to get good moral men in office—men who are too dignified to weaken their mental and physical ability by the use of opium, morphine, intoxicants, tobacco, or any other degenerating agency; then a moral and physical education should be compulsory in all schools, and there should be at least a small flower-garden to every school. They should be taught to love a flower, to love something, yes, to love the Creator—to love and respect all good people. They should also learn that, to be "happy," it is necessary to be healthy. They should learn to eat natural food, and abstain from all artificial food such as sugar, flour, vinegar, wine, etc.

By the way, I see Mr. Graves finds a little fault

about your enthusiasm over Florida. The fact is, a man with a good healthy conscience and enough to eat can see and enjoy the beauty of nature anywhere. He acknowledges that they have 98 per cent climate. Well, that is certainly not bad. Anybody ought to live on that; but *here* we have 150 per cent, and we can nearly live on it too - no mosquitoes nor redbugs; no blizzards nor cyclones, and we can sing the old song:

Have you heard of the sundown sea, love,
With its blue and golden sky,
Where the ripples play the lylong day,
Where the summers never die?
Here is health and wealth for you, love;
Here is health and wealth for me;
Here is all that is best in the golden West,
In the land of the sundown sea.

Aguanga, Cal., Oct. 11.

PAUL THOMSEN.

My good friend, I fear you are a little rough on our preachers. Are you going to meeting every Sunday so that you *know* just what kind of preachers we do have? And let me suggest, too, that ministers *should* be a little careful about "speaking out," as you term it. Do you remember what the Savior said about disturbing and endangering the wheat by pulling out the tares? I am glad you like your California climate. But you do have blizzards once in a while, even in California—at least you did when I was there. And you do have it terribly dry and dusty in the summer time, which is not the case down in "sunny Florida."

A LARGE CITY OF OHIO THAT NOT ONLY VOTED DRY BUT KEEPS DRY.

On page 508, May 15, 1904, and page 558, June 1, 1904, I described a visit at the home of the great flower establishment of Good & Reese, of Springfield, O. At that time their plant covered something like five acres, but I do not know what it covers now. I do know that this firm is quoted by Dun and Bradstreet away up in the thousands.

Well, in a recent letter from one of the proprietors, at the close of it I had one of my happy surprises by finding the following as a sort of postscript:

It may be of interest to you (this being the largest dry city in the State) to know how the Rose law operates with us. When we first voted dry, about half of the saloons gave up entirely; the other half have claimed to sell soft drinks; but at the present time, when they are caught they are known as hard-drink propositions. On the prominent squares of the city, where there were some 40 odd saloons, there are now six that are not used for other business purposes, and these six, at this writing, are closed up tight.

The law has been a great benefit to poor people who spent their money for drink in the saloons. The family now reaping the benefit in better food and better clothing. On the whole, we are pleased to say the law has worked wonders in Clarke County. Springfield, Ohio, Sept. 27.

J. M. GOOD.

I was particularly pleased to know that one of the greatest establishments of this kind in the State, and perhaps one of the greatest in the United States, was on the dry side; and I felt pleased, too, to know that the writer recognized that I was as much interested in righteousness and temperance as in greenhouses and beautiful flowers. Surely our nation is "marching on."

THE INSECT PESTS OF FLORIDA AND OTHER SOUTHERN CLIMES; ALSO SOMETHING ABOUT THE "EMERGENCY FOOD."

In my hand is a book entitled "The Book of Camping and Woodcraft." One of our good friends who reads GLEANINGS calls attention to the fact that the above-mentioned book would give me "the truth" about "redbugs," jiggers, etc., not only from practical experience in the woods, but from a scientific point of view. On the outside wrapper of the book is a sort of introductory as follows:

Sound "horse-sense" about the ways of the woods, written by a man of long experience, by a man who loves the wild, by a man who gives scholarly attention to the smallest details, and, best of all, by a man who can write. In its way, a masterpiece. A book every outdoor man or woman must have, and a book every indoor man or woman should read.

Well, after looking the book over quite a little I heartily second the above. Although I am not much of a hunter, and I am *not* in favor of taking animal life unless it is really necessary, I have read the book with the keenest interest. Even if you have no fancy for the "wild wood" you will greatly enjoy it, no matter what page your eye strikes; and after you once begin reading it you will certainly read it all through. I feel greatly tempted to make longer quotations, but our space is more than filled already.

JIGGERS, REDBUGS, ETC.

The *moquim* . . . a microscopic scarlet *acarus*, resembling a minute crab under the glass. It swarms on weeds and bushes, and on the skin causes an intolerable itching. An hour's walk through the grassy streets of Telfé was sufficient to cover my entire body with myriads of *moquims*, which it took a week, and repeated bathing with rum, to exterminate.

Carapatos, or ticks (*exodes*), which mount to the tips of blades of grass, attach themselves to the clothes of passersby, and bury their jaws and heads so deeply in the flesh that it is difficult to remove them without leaving the proboscis behind to fret and fester. In sucking one's blood they cause no pain; but ferocious sores, even ulcers, often result.—ORTON, *The Andes and the Amazons*, pp. 484-487.

The author of the book comments on the above as follows:

The *moquim* mentioned above answers the description of our own chigger, jigger, red-bug, as she is variously called, which is an entirely different beast from the real chigger or chigoe of the tropics. I do not know what may be the northern limit of these most unladylike creatures, but have made their acquaintance on Swatara Creek in Pennsylvania. They are quite at home on the prairies of southern Illinois, exist in myriads on the Ozarks, and throughout the lowlands of the South, and are perhaps worst of all in some parts of Texas. The chigger, as I shall call her, is invisible on one's skin, unless you know just what to look for. Get her on a piece of black cloth, and you can distinguish what looks like a fine grain of red pepper. Put her under a microscope, and she resembles, as Orton says, a minute crab. She lives in the grass, and on the under side of leaves, dropping off on the first man or beast that comes her way. Then she prospects for a good place, where the skin is thin and tender, and straightway proceeds to burrow, not contenting herself, like a tick, with merely thrusting her head in and getting a good grip, but going in body and soul, to return no more. The victim is not aware of what is in store for him until he goes to bed that night. Then begins a violent itching, which continues for a week or two. I have had two hundred of these tormenting things in my skin at one time.

If one takes a bath in salt water every night before retiring, he can keep fairly rid of these unwelcome guests; but once they have burrowed underneath the skin, neither salt nor oil nor turpentine

nor carbolized ointment, nor any thing else that I have tried will kill them, save mercurial ointment or the tincture of stavesacre seed, both of which are dangerous if incautiously used. After much experiment, I found that chloroform, dropped or rubbed on each separate welt, will stop the itching for about six hours. It is quite harmless, and pleasant enough to apply. The country people sometimes rub themselves with salty bacon-rind before going outdoors, and claim that this is a preventive; also that kerosene will do as well.

If one keeps an old suit of clothes expressly for chigger-time, puts the suit in a closet, and fumigates it thoroughly with the smoke of burning tobacco stems, no chigger will touch him. Alas that the preventives should all be so disagreeable!

Concluding this rather painful essay, I will say that the most satisfactory all-around "dope" that I have found, to discourage attack by mosquitoes, flies, midges, fleas, and ticks, is oil of citronella, which, for the two last-mentioned pests, as well as for bed-bugs, must be rubbed all over one's body before going into the woods, or before retiring. I have used it thus, daily, for months, with no ill effect. It is not unpleasant to use, and can be procured at any city drugstore, or at a barber shop.

In giving the names of these pests, or, in fact, any thing else, I think it is well to have the names describe the insects as much as possible. The words chiggers, jiggers, etc., in different localities refer to quite different insects. In the poultry catalogs the insect that attaches itself to the combs of fowls and on the heads and under the chin of little chicks is called "stick-tight flea;" and this name, if adopted, would describe the insect to everybody so that no mistake could be made, and I would "stick tight" to it. These stick-tight fleas may be very troublesome on human beings; but they are quite a different thing from the redbugs. It is the latter that produce the itching and tormenting sores that last for a week or two. I think "redbugs" is the best name for them. But we should remember they are almost microscopic. I have never tried the oil of citronella, but I will when I get back to Florida.

EMERGENCY FOODS.

Now, here is something else in the book that is exceedingly valuable; in fact, the title of the chapter took a mighty hold on me. It discusses what kind of food will give most strength and endurance, that has little weight, and which can be packed into a small compass. After discussing almost every thing that has been tried by hunters, trappers, and others who go off in the desert or through the uninhabited wilderness, the author of the book comes out with a strong indorsement of T. B. Terry and of your humble servant, who is getting youth, vitality, and enthusiasm by living mostly on an "emergency diet." Read what I quote from page 221:

Good wheat is as good as corn, and perhaps better, while the mixture is very good. Common rolled oats browned in a pan in the oven and run through a spice-mill is as good and easy to make it out of as any thing. A coffee mill may do if it will set fine enough. Ten per cent of popped corn ground in with it will improve the flavor so much that your children will get away with it all if you do not hide it. Wheat and corn are hard to grind, but the small Enterprize spice-mill will do it. You may also mix some ground chocolate with it for flavor, which, with popped corn, makes it very fine. . . . Indigestible? Your granny's nightcap! . . . You must remember that it is "werry fillin' for the price," and go slow with it until you have found your coefficient. . . .

Now for the application. The Mexican rover of the desert will tie a small sack of *pinole* behind his saddle and start for a trip of several days. It is the lightest of food, and in the most portable shape, sandproof, bug and fly proof, and every thing. Wherever he finds water he stirs a few ounces in a cup (I never weighed it, but four seem about enough at a time for an ordinary man), drinks it in five seconds, and is fed for five or six hours. If he has jerky, he chews that as he jogs along; but if he has not he will go through the longest trip and come out strong and well on *pinole* alone.—*Shooting and Fishing*, Vol. xx., p. 248.

There, friends, do you not see how we come around once more to the "dry mash" for chickens? The very thing that makes the chickens strong and well is exactly what makes men and women strong and well. There is a lot of foolishness in the papers and among the people because it is said that provisions are so high that working people can not "earn enough to live." Now, there are wrongs to be corrected, I am well aware; but *while* these wrongs are being righted it is sheer folly to say we can not get enough to eat. I feel like using the phrase in the above extract—"Your granny's nightcap!" You can certainly scrape up money enough, any of you, to buy some corn and some wheat. Parch it in the oven as directed above, then grind it in a coffee-mill, and you have got the very best *emergency food* in the world.* It will make you happy and make you well; and you do not have to pay any profit to the middleman or grocer. Go and buy your corn and wheat of the farmer. If you want a variety, get some rolled oats of Montgomery Ward & Co., at a little more than 2 cts. per lb. By the way, Mrs. Root and I expect to go back to our Florida home about the first of November, and we are going to carry a bag of wheat down there that was raised here on our own farm. We go to the expense of shipping it so far mainly

*The above reminds me that my youngest sister (whose death I mentioned recently), in our childhood days used to be very fond of parched corn ground in a coffee-mill. When she wanted to please her favorite brother (my poor self) she would select some nice corn from the crib, then parch it just to a turn, grind it in a coffee-mill, then stir it in some nice new milk; and when I came home hungry it seemed to "hit the spot" better than any thing else in the world for a growing boy; and I believe I would now rather have some parched corn ground in a mill, with a cup of milk, than any other *menu* to be had in our highest-priced restaurants. If you will turn over to the book of Ruth you will find that, when Boaz was courting Ruth, while she sat at dinner among the reapers he said to her, "At meat-time come thou hither and eat of the bread, and dip thy morsel in the vinegar." And we read further, "He reached her parched corn, and she did eat, and was sufficed." Now, even if this is getting to be a lengthy footnote I want to suggest for the children something more. My sister Mattie, when she had plenty of time, would sometimes cut out just the germs of the corn with a knife, and this chit, or germ, when eaten by itself has the flavor of fine nuts, and is a most delicious dessert. And, by the way, the red squirrels that flock around our corn-crib have caught on to the same trick, for they annoy us by taking the germ of the corn in the same way and letting the remainder drop on the ground. Well, I have tried feeding these "germless" grains to the chickens; but even they will not accept this mutilated corn so long as they have access to the other kind. Here is a chance for somebody to get out a new kind of food or confection. Perhaps sprouting the corn a little would increase the amount of sugar; and the Chinese have for years furnished on the market a choice delicacy in the way of sprouted peas.

because it is a better quality of wheat than we get at the feed stores down there, and it is perfectly free from dirt and trash. The book tells us that Daniel Boone in his celebrated exploring trip lived mostly on his ground parched corn. The Spaniards in the South have a similar article that they call pinole (pe-no-lay). In the last paragraph in the above, allusion is made to "charqui." This is what the Indians call jerked venison. It is something like our dried beef. Now, Mrs. Root is so fond of a nice article of dried beef that we have our grocer here in Medina send it to us in Florida by mail. It does not keep in that hot and humid climate. Of course, they have it in glass tumblers, but it is not as good, and costs more than to have it sent by mail. Yes, we *do* have to pay 16 cts. per lb. because of the absurd absence of parcels post here in our own country. If we had such mail privileges as all the rest of the world enjoys, or such as the people of foreign countries enjoy in sending any thing to the United States, we could get a lot of concentrated foods by mail. May God help us. Well, now this one chapter on emergency foods in that book is worth more than the price of the book; and it comes to us from a source so little expected that the whole book is one of my happy surprises, written by a man who tramped for days, carried his gun, provisions, and a blanket to sleep on. I suspect there are many college professors—yes, and city editors (as well as some out in the country), who could "sit at the feet" of our author and learn wisdom.

There is one chapter on camp cookery that makes me hungry every time I read it. May God be praised that we have practical men who give us a book containing so much wisdom, and at the same time give it to us in such a genial and comical way that everybody will read it. I am sure you will excuse me when I add that we have made arrangements to furnish the book from this office, and for saying it right here in these reading-columns.

Just one little illustration of the comical things in this book. When out in the woods, and short of stores, you have got to learn to eat, sometimes, every thing that comes along. He, therefore, opens the chapter on the emergency foods with the following couplet:

But rats and mice, and such small deer,
Have been Tom's food for seven long year.

FLORIDA LAND SPECULATORS; SHIPPING HONEY TO IRRESPONSIBLE PARTIES, ETC.

The following from a recent number of the *Rural New-Yorker* hits the readers of GLEANINGS in several ways; in fact, it indorses what I have been telling you again and again:

Some time ago I bought ten acres of land in Florida of the Tampa Bay Land Co., Tampa, Fla., on installments. After paying five installments I did what I should have done in the first place. I sent a good reliable man to see the land. I inclose the answer. I do not suppose I can get any thing out of it, but would like to have others warned against buying waste

land from these companies that have good land, but sell the poor to fools who do not see it. I told them I would send the case to you; but their answer was that you would be afraid to do any thing—at least that is the way I read it. C. J. H.

The substance of the report on the above purchase from a reliable man at Tampa is as follows:

This land is level, and is what is commonly known in Florida as flat-woods land. There are some pine-trees growing on this land, and scrub palmettos. The land is dry, and is worth about \$15.00 or \$20.00 per acre. You can buy land in any quantity, from 1000 to 10,000 acres, as good as this land, and as conveniently located to Tampa, for \$20.00 or \$25.00 per acre. In my opinion you can buy forty acres of land almost as cheap as you can buy this ten acres, that would be just as good for all practical purposes as this property. I have no desire to injure the parties selling this property. They have some good land for trucking and gardening in their colonies; but in my opinion this dry flat-woods land such as this, is not worth the price you are paying for it. If you intend to come to Florida, my advice is for you not to buy any thing till you reach here. If you do not intend to come down, but are buying for speculation, I advise you to invest your money in property different from this. This is my candid and honest opinion, and I do not wish you to quote me in this matter.

This again confirms what we have so often advised. Do not buy any lands from the real-estate promoter for speculation or investment. If you want to buy land to occupy, either visit the section yourself or have some trusted disinterested person investigate it for you. You will find in every case that you can buy land, not controlled by the promoters, in the same neighborhood, and as well or better suited to your purposes, for a half or quarter of the price you pay the promoters.

It is not always safe to speculate on what *The Rural New-Yorker* dare do. Our business is to get information for our people, and then to give them the benefit of it without regard to the consequence.

On September 10, 1908, I shipped a bill of honey to Hodgson & Johnson, Washington, Pa., amounting to \$65.00, and have been unable to get even a reply to my letter since then. I am told that they are now located at McKeesport, Pa. If you will try to get the bill I will repay you. H. W. B.

We located these parties at McKeesport, but were unable to get so much as a word from them. We then placed the account with our attorneys; but they were unable to get a settlement without suit. We finally engaged an attorney to bring suit, and the account was collected in that way; but it cost the shipper 50 per cent of the claim. Some of our publishing friends say it is not dignified for a paper to tell such things. Perhaps not; but we should like to have some of them give us a name for the concern that beats a producer out of half his product. We confess that it is hard to confine ourselves to printable language in the telling of such simple robberies. This is the class of people who want to be let alone!

KEY WEST CONNECTED WITH THE MAIN-LAND BY RAIL.

On Sept. 17, 1910, the first train of cars entered Key West on the Oversea Railway, the termination of the Florida East Coast Railway. In the winter of 1902, when returning from Cuba I was watching the islands as our steamer passed one after another. I soon got into conversation with a passenger, and he informed me that he was making a trip to report on the feasibility of building a railway along those islands to Key West; and I am afraid that I was speculating in my mind whether he was an educated engineer, or a man not quite sane. Since then I have watched the progress of that wonderful undertaking with unusual interest; and now that the road is really completed, and running as far as Key West, I for one feel like rejoicing that our nation has been able to furnish a man with the grit and perseverance to bridge the mighty sea thus far. It is probably the longest stretch of dead-level road ever constructed by man.